American Aviation

MANAGEMENT
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EQUIPMENT

AUGUST 31

1953

Donald Douglas, Jr.
Vice President
Douglas Aircraft . 22

FICON: New Role
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★

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Air Force Association's proposal to establish a permanent independent commission of leading civilians to formulate and review national strategy, similar to the President's Air Policy Commission of 1947, may prove most important move ever taken by AFA. Proposal has backing of top people in industry.

Many smouldering issues are put in the limelight by AFA's "Statement of Policy:" Weapons Systems Evaluation Group, which should advise Joint Chiefs of Staff on strategy matters, is ineffective; individual services are neither cooperative nor objective; even when basic concepts are accepted by JCS, the services often fail to implement them.

AFA proposal should find favor with Eisenhower administration. It fits in well with GOP program to temper high level military strategy with a system of civil checks and balances.

• •

Justice department won't indicate when it will file civil anti-trust suit to break-up management deadlock of Panagra, but only top level clearance is necessary. Suit actually was prepared years ago and needed only a minor polishing job when CAB gave the go-ahead sign in July.

• •

Trend towards procurement under weapons systems concept, placing greater responsibility on a single contractor for the complete aircraft and its systems, has renewed interest in the plan to place the Air Research & Development Command and Air Materiel Commands under one new "air staff department."

Indications are that General Rawlings, commanding general of AMC, would take over the combined commands with General Baker, AMC comptroller, first in line for Rawling's present job. Proponents claim reorganization would improve AMC/WADC liaison, a requirement made critical by the tendency toward developmental procurement.

• •

U. S. participation in civil international aviation is due for a major overhaul. Signposts include: Commerce Department's efforts to reduce drastically U. S. ICAO budget, unsuccessful this year but still very active; appointment as delegate on the ICAO Council of former CAB member Harold Jones, a Commerce Department appointee who will dispel the State Department lethargy there; and growing antagonism of many countries toward US/ICAO relationships.

Proposed formation by Council of Europe, embryo European parliament, of a civil regional organization paralleling ICAO, which could provide a means of circumventing ICAO procedures to the detriment of the U. S., is another key to situation.

• •

Contract between U. S. Air Force and Fairchild, under which Fairchild is to determine the CAA certification requirements of the obsolete C-82 Flying Boxcars, points up USAF's apparent decision to unload old equipment. Move tends to confirm earlier report USAF is also ready to sell C-46's to the operators. Douglas C-54's probably will be kept until Lockheed C-130's are available.

Decision would tend to reduce number of transport wings in service, reduce operations costs, and permit greater utilization of newer types.

The Washington View

The Investigative Mind at Work

The veil of secrecy covering the investigation of CAA's handling of the disposition of surplus airports after World War II by Senator McCarthy's subcommittee on government organization was slipped aside long enough last week to disclose that:

•**Two investigators,** a Mr. Duffy and a Mr. Levine, have been in the CAA Office of Airports for the past month going over the department's records in great detail.

• **Duffy and Levine** seem primarily interested in disposition of surplus airport property, i.e., who obtained deeds to the surplus airports, how many times they have changed hands since, financial arrangements, etc.

Officially McCarthy's office wasn't admitting anything. When an AMERICAN AVIATION reporter called Thomas LaVenia, a McCarthy staff investigator, to confirm reports of the airports investigation, the conversation went like this:

Reporter: Mr. LaVenia, we understand from some sources that McCarthy is conducting an investigation of CAA, specifically airports, with probable emphasis on surplus property airports after World War II. What is the story on it?

LaVenia: You sound like me. You play ball with me and I'll play ball with you. Where did you hear this?

Reporter: My editor heard about it and asked me to follow up. He is my source, and what do you mean by playing ball?

LaVenia: Exactly that. You tell me what you know, and who told you about it, and then I'll talk. Otherwise, no comment.

Reporter: Are you serious about this?

LaVenia: You said it, sister. If your boss wants the story badly enough he'll have to play ball. I have no comment, otherwise.

With this the interview ended.

Discrimination in Defense?

If Senator Wayne Morse (Ind.) of Oregon has his way, Defense Secretary Charles Wilson will have some explaining to do when Congress reconvenes. Morse has charged that Wilson's onetime employer, General Motors, "is receiving favored treatment by the Defense Department." Morse claims that Wilson is discriminating against GM competitors and that "there are companies manufacturing aircraft jet engines who are no longer allowed to participate in bidding."

Whether or not the accusations will stand up, Wilson is not in an enviable position. While virtually every aircraft defense contractor in the Detroit area has been cut back or had contracts completely eliminated, GM's activities have remained at peak levels, according to Pentagon sources.

Although Wilson has generally attacked the wisdom of the second source program, the so-called base broadening program of the Truman Administration, it is General Motors' second source program for Wright J65 Sapphire jet engines which remains untouched amid sweeping cutbacks.

Actually General Motors' active participation in aviation defense contract activities are long standing enough to withstand close scrutiny. Among the major contracts: production and development of turbojet and turboprops by the Allison Division; second source production of Wright R-3350 series engines by Chevrolet at Towanda, N. Y.; and second source production of Republic F-84F jet fighters by the Buick-Oldsmobile-Chevrolet assembly plant at Kansas City.

Clean Slate for NACA

Probers from the House Government Operations Committee found nothing serious in its investigation of the National Advisory Committee for Aeronautic's Lewis Flight Propulsion Laboratory at Cleveland. Subcommittee headed by Rep. George H. Bender (R., Ohio) found most complaints were unwarranted, unfounded rumors. NACA officials cooperated in every way with the subcommittee, which started work on the investigation last winter. Lewis dropped between 300-400 people as a result of budget cuts in fiscal 1953. Resultant complaints to Bender led to the investigation.

FitzGerald to Succeed Bain?

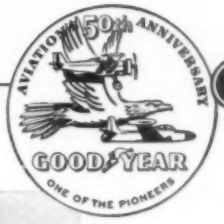
Best bet to replace Gordon M. Bain in CAB's top staff spot—director, air operations bureau—is Joseph H. FitzGerald, current head of CAB's Alaska Office. His appointment should be announced in early September.

Though backed solidly by House Majority Leader Joseph W. Martin, Jr. (R., Mass.), and supported strongly by A.T.A. officials in Washington, FitzGerald virtually cinched the spot when his closest rival, Colin H. McIntosh, former Allegheny Airlines official, withdrew his name from consideration.

A FitzGerald appointment for Martin, incidentally, would give the erstwhile Massachusetts legislator the edge in patronage appointments to CAB. He also backed Harmar D. Denny for a Board membership. White House aide Charles F. Willis takes the credit for Robert L. Griffith's appointment as enforcement chief, and the late Senator Tobey and Sherman Adams backed Raymond Sawyer for the CAB executive director spot.

TIME WAS when Calbraith Rodgers took 84 days to complete the "First Transcontinental Aeroplane Flight" on Goodyear tires—a daring trip during which Rodgers had to be accompanied by a train carrying spare parts, as well as a tow truck for hauling his Wright biplane out of ditches!

For that was back in 1911 when plane and engine usually required drastic overhaul after a few hours' flight. In those days the number of civilian aviators could be counted almost on one's fingers. "Landing fields" were any available pasture, and airports and service facilities were practically non-existent.



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OTHER PUBLICATIONS . . .

American Aviation Daily, a daily news service for the entire industry. $200 per year. Managing Editor: Keith Saunders.

American Aviation Directory; twice yearly listing of products, people and organizations. $7.50 each. Managing Editor: Marion E. Grambow.

Official Airline Guide: Monthly publication of airline schedules and fares. $13.50 per year in USA and countries belonging to Pan American Postal Union, including Spain and the Philippines. $15 elsewhere. Published from 139 N. Clark St., Chicago 2, Ill. Central 6-5804. Managing Editor: Robert Parrish.

American Aviation Traffic News incorporating Air Tariff Reports): Daily rates and tariff news. $150 per year. Managing Editor: Wallace I. Longstreth.

Where & When

Sept. 5-7—National Aircraft Show & 50th Anniversary of Powered Flight, Dayton, Ohio.

Sept. 8-10—ATA, Agency Committee, Allison Hotel, Miami Beach, Fla.

Sept. 9-10 ATA, Reservations Committee, Chicago.

Sept. 9-11—Air Safety Seminar, Flight Safety Foundation, probable location, Luxembourg.

Sept. 14-16—ATA, Rates & Tariffs Committee, Laurentides Hotel, Ste. Agathe, Quebec.

Sept. 21-23—Instrument Society of America, 8th National Instrument Conference & Exhibit, Chicago.

Sept. 22-24—Aircraft Spark Plug & Ignition Conf., Champion Spark Plug Co., Toledo, Ohio.

Sept. 24-25—Radio Technical Commission for Aeronautics, Fall Assembly, Sheraton Park Hotel, Washington, D. C.

Sept. 27-29—Int'l Northwest Aviation Council, 17th Annual Conference, Gearhart, Oregon.

Sept. 28-30—National Electronics Conference, 9th Annual Meeting, Hotel Sherman, Chicago.

Sept. 29-Oct. 3—SAE, Aeronautic Meeting & Aircraft Engineering Display, & Aircraft Production, Hotel Statler, Los Angeles.

Sept. 30-Oct. 1—AIEE, Aircraft Electric Equipment Conference, Seattle.

Sept. 30-Oct. 1—Air Traffic Conference, Cargo Advisory Board, San Francisco.

Oct. 1-3—Air Reserve Assn., Annual Meeting, Angebilt Hotel, Orlando, Fla.

Oct. 10-17—5th Annual All-Texas Air Tour. Information from Texas Aeronautics Commission, Walton Bldg., Austin.

Oct. 13-15—Air Transport Association, Annual Engineering & Maintenance Conf., Saxony Hotel, Miami Beach, Fla.

Oct. 14-15—New York State Dept. of Commerce, Annual Airport Development & Operation Conference, Onondaga Hotel, Syracuse.

Oct. 19-22—ATA, Purchasing Committee, Saxony Hotel, Miami Beach, Fla.

Oct. 28-30—Southeastern Airport Managers' Association, Annual Convention, Marlin Beach Hotel, Fort Lauderdale, Fla.

Oct. 29-30—National Business Aircraft Assn. (formerly CAOA), 6th Annual Forum & Meeting, Park Plaza Hotel, St. Louis, Mo.

Nov. 3-4—Transport Aircraft Hydraulic Conference, sponsored by Vickers, Inc., Park Shelton Hotel, Detroit, Mich.

Nov. 3-6—National Association of State Aviation Officials, Annual Meeting, Edgewater Gulf Hotel, Edgewater Park, Miss.

Nov. 5-6—SAE, Fuels & Lubricants Meeting, Conrad Hilton Hotel, Chicago.

Nov. 16-17—American Society for Quality Control, Aircraft Quality Control Conf., Biltmore Hotel, Dayton, O.

Dec. 3-5—7th annual Arizona Aviation Conference, Yuma, Ariz.

Dec. 17—17th Wright Brothers Lecture (sponsored by IAS), U. S. Chamber of Commerce Auditorium, Washington, D. C.

INTERNATIONAL

Sept. 7-13—SBAC Aircraft Show & Flying Display, Farnborough, England.

Sept. 7-18—IAS-RAES, 4th Int'l Conference, London, England.

Oct. 5-10—IATA Annual Assembly, Montreal, Canada.

Oct. 10—International Air Race, England to Christchurch, N. Z.

Nov. 1-22—IATA, Traffic Conferences, Honolulu.

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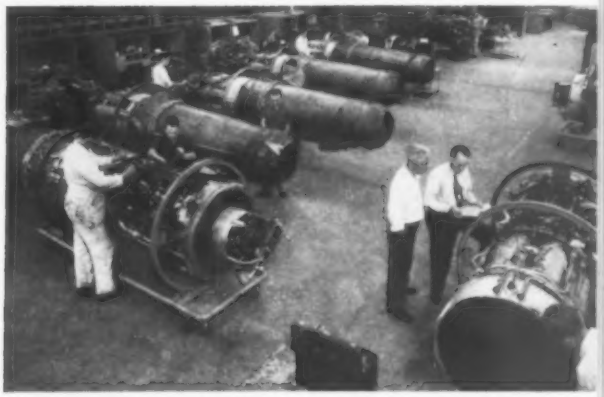

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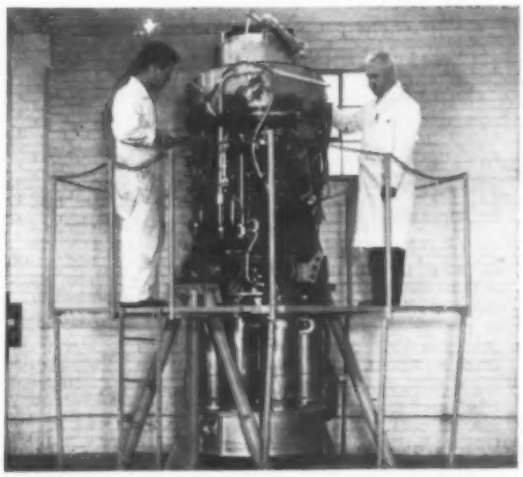

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Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N.W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

THE MILITARY LIFE

To the Editor:

My heart bleeds for Col. Oliver G. Haywood, Jr. referred to in "The Military: Second Class Citizens?" (AMERICAN AVIATION, August 17). Why doesn't he come out and say some firm is giving him a lush salary to desert the government which spent its money training him to the point he is at today?

I find nothing wrong with a man taking advantage of better financial offers, but why try to peddle the line that he's backing into it because of such things as "the deteriorated financial status of professional military man has lowered his civilian social status . . ."

I would hate to be his future employer, knowing he will eventually look down upon me as he does on the military which gave him what he has today.

Yours truly,

"I Wish I Had a Colonel's Pay"

(Col. Haywood's resignation was submitted months before he started receiving job offers from industry. It should be noted again, as stated in his resignation letter, that one of Col. Haywood's primary complaints was that he had to impose on his subordinates what he termed "conditions of second-class citizenship."—Ed)

•

NON-SKED'S EXPLAINED

To the Editor:

I suppose that I should be ashamed to admit it, but I have never understood the make-up of the non-skeds involved in the current fight, that is, until reading the fine article by William V. Henzey in the August 3 issue. I am sure that it must have helped others to a clearer understanding. I hope that you will continue with this good work.

JERRY KELLER

Central Airlines, Inc.
Fort Worth, Texas.

•

THE QUESTION OF PRESTWICK

To the Editor:

In spite of the fact that you start off your remarks in your "En Route" column of the August 3 issue of AMERICAN AVIATION about the relative merits of Prestwick and Renfrew by admitting that you are biased, I feel I must challenge some of your observations.

You maintain we should close Renfrew and concentrate on Prestwick as the airport for Glasgow. Admittedly, this might have some advantage for the very small number of international passengers in transit at Prestwick arriving, as you did, by SAS, but it would be hard on the Glaswegians if they were to be deprived of their airport at Renfrew, which is only five miles from Glasgow, and force them to go another 30 miles or more to Prestwick, to say nothing of the fact that the ground transportation charges would thereby be trebled.

You also maintain that the Ministry of Civil Aviation cannot understand why Prestwick is losing money whereas the previous operators made it pay and could easily make it pay today if given the opportunity.

I would simply point out that before the war when Prestwick was operated privately it was a small grass field with no paved runways and no international services. The operation of a large international airport with all that this involves in the way of miles of paved runways, taxiways, hangars and numerous other expensive installations necessary for the safe operation of the heaviest types of civil transport aircraft is a very different matter, as you well know.

We are attempting to meet the needs of the traveling public, and the fact that there are far more international passengers desiring to come to London than to Scotland cannot be controverted. But it is simply not true to say, as you do in the editorial of the same issue of the magazine, that we are neglecting Prestwick and focussing all our attention on the single gateway of London.

Prestwick is, and will continue to be, the second international airport in the United Kingdom, and within the last month the Minister of Civil Aviation announced in Parliament that construction of a new runway there would start in 1954.

R. S. S. DICKINSON

Civil Air Attache
British Embassy
Washington, D. C.

•

BOTH THEIR HOUSES

To the Editor:

I read with interest your editorial on the "Prestwick Enigma" in the August 3rd number of AMERICAN AVIATION and also your comments in "En Route" on your experiences in passing through Scotland.

With most of what you wrote I am in hearty agreement. However, I am sorry you and your Scottish friends seem to have fallen for England's old dodge of "divide and conquer" when you suggest that Scotland's aviation woes have their root in "the great swollen bureaucracy of London."

That socialistic bureaucracy is only incidental. As the socialists obtained a firm foothold immediately after the Second World War as the political heirs of a war emergency dictatorial set-up of many years duration, it is only natural that such a fine entrepreneur as Captain McIntyre should attribute his difficulties to what seems to be socialistic policies. Actually had the postwar general election made the Tories instead of the Socialists heirs of the wartime organizations of government, Captain McIntyre's and Scotland's aviation troubles would have followed pretty much the same basic pattern—wishful thinking to the contrary.

I was right up to the neck in pioneer Scottish aviation in 1933, 1934, and 1935 and organized the first air ambulances to be operated in Great Britain while I was with Midland & Scottish Air Ferries Ltd. Also with the same company I organized the first successful all-the-year-round scheduled air passenger service to operate in Great Britain between Glasgow and Campbeltown in Southern Argyllshire in 1933.

During all the time I was in Scottish aviation a strongly anti-socialist government was in the saddle in London. It left no stone unturned to block every move we made to develop aviation in Scotland, while it gave similar moves by other companies in England every encouragement possible.

For example we were prohibited from flying planes between Scotland and Eire unless each of our planes landed both going and coming at an RAF air base in Northern Ireland for Customs clearance both ways, for which privilege the RAF charged us a landing fee of £5-0-0 ($20) every time one of our planes landed at its precious air base.

I could go on indefinitely citing cases of overt acts of discrimination against Scottish aviation, but of course, as you say, these concern British internal affairs, and you would not be interested. As far as British Tories and British Socialists are concerned, I heartily wish a plague on both their houses.

On the international front, however, the story of one phase of Scottish aviation development is very important, whether England likes it or not. Incidentally England's determination to block that development needlessly cost the lives of quite a number of American boys during the Second World War.

My intensive study of the western seaboard of the British Isles from Cork, Eire, in the south, to Stornoway, Lewis, in the north, to determine the feasibility of a future European airport for trans-Atlantic travel somewhere in that area was very enlightening. Needless to say, with the knowledge my work with Midland & Scottish Air Ferries Ltd. gave me, the hoggish attitude of the British authorities in the matter of the air base which it assigned to the USA for trans-Atlantic operations during the Second World War astounded me, although of course, from my past direct experience with them I should have expected it.

J. GRAHAM McDONALD

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"Regulus Launched"

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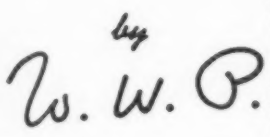
The 'New Look' at CAA

THE Civil Aeronautics Administration is entering its sixteenth year since the passage of the Civil Aeronautics Act of 1938, and the seventh month under the new Eisenhower Administration.

The new Administrator, Fred B. Lee, was faced at the outset of his term with effecting a substantial reduction in personnel in line with the Administration's general economy drive. CAA morale sank pretty low. In addition CAA has been fair game for criticism from trade press and industry. Top all this with a succession of administrators since World War II, and it can be generally conceded that CAA has had a rough time.



Current Cutbacks

Let's look at the record and guestimate the future.

We think the economy achievements of 1953 have been impressive. Reorganization of the regions will save $1.7 million during this fiscal year. A total of 1253 job positions have been eliminated. Excluding existing vacancies, 969 persons have been dropped from the payroll. From a peak of over 18,000 employes a few years ago, CAA is now down to slightly below 16,000.

Half of the positions in the airport division were liquidated. Regional educationists were discontinued. A consolidation of maintenance and installation engineering in Federal airways is saving $100,000. Medical research was transferred to Ohio State University. Twenty airport and 13 aviation safety district offices were eliminated. A million dollars is being saved on a new preventive maintenance program in Federal airways. A cutback in training programs is saving $600,000 this year. Out of CAA's fleet of passenger cars, 73, or 10% of the fleet, have been eliminated. All in all, CAA is saving $5 million from the original Truman budget estimate for this fiscal year.

This all stacks up in, our opinion, as a good start toward tightening up. Nobody could have asked for more in such a short time. In addition, CAA's relations with Congress are at their peak best, for which Lee's assistant, Albert Forte, is given considerable credit.

Predecessors

Part of CAA's past troubles have stemmed from the number and character of administrators over the past 10 years.

Going back a bit, T. P. Wright was a capable scientist with a worldwide reputation. He made a definite contribution to CAA, but the intrigue and maneuverings of old-line CAA personnel were beyond his understanding or handling.

Wright was succeeded by Delos Rentzel, a man of ambition who painted with a broad brush, but to whom details were anathema. At the time of postwar expansion in which he served, CAA needed a broad brush. But Rentzel, who disliked displeasing anyone, left many knotty problems unsolved.

Then came Don W. Nyrop who, like Rentzel, was to pass on up the ladder to the chairmanship of the CAB. An almost exact opposite of Rentzel, Nyrop became immersed in details. Given time, he would have left a highly creditable record; his integrity and know-how were of the best. But he was moved out and upward, against his own desires, before his program was finished.

Nyrop was succeeded by Charlie Horne, as likeable and personable a man as ever held the administrator's job. He was anxious to succeed. But this anxiety to succeed often led him into promises which could not be fulfilled in a complex and sprawling government agency. Like Rentzel, Horne disliked making enemies or displeasing people. He shied away from drastic changes. But Horne made many friends and his intentions were of the best.

And now we have Fred Lee, a Republican from 'way back, who knows CAA thoroughly from having served as deputy administrator for quite a few years. He flies his own airplane. A man of independent means, he doesn't need the job. He is a serious, sincere "working blueblood." His integrity is unquestioned. Whatever further ambitions he may have, these won't temper his present decisions. He doesn't frighten easily. Now that he's in top spot after being second man for so long, his capabilities as administrator should increase materially. Perhaps most of all, Fred Lee offers to CAA the one thing it needs so much: stability and continuity.

Lee's Job

Fred Lee's job is not one to be envied. It's easy to compromise in government. There's always the easy road. But CAA was in need of some major reshuffling and the most important reshuffle to date is that of aviation safety. Al Koch, a 26-year veteran of government service who will retire in two years, is taking over from Ernest Hensley, who is being transferred to the Ninth Region. It is important to know that Koch didn't ask for or want the job—his first knowledge was reading the press release announcing the shift—and that he preferred to remain as director of the international region, in which he has established a creditable record.

Hensley had become a controversial figure in CAA, partly because he made the horrendous mis-

something to think about

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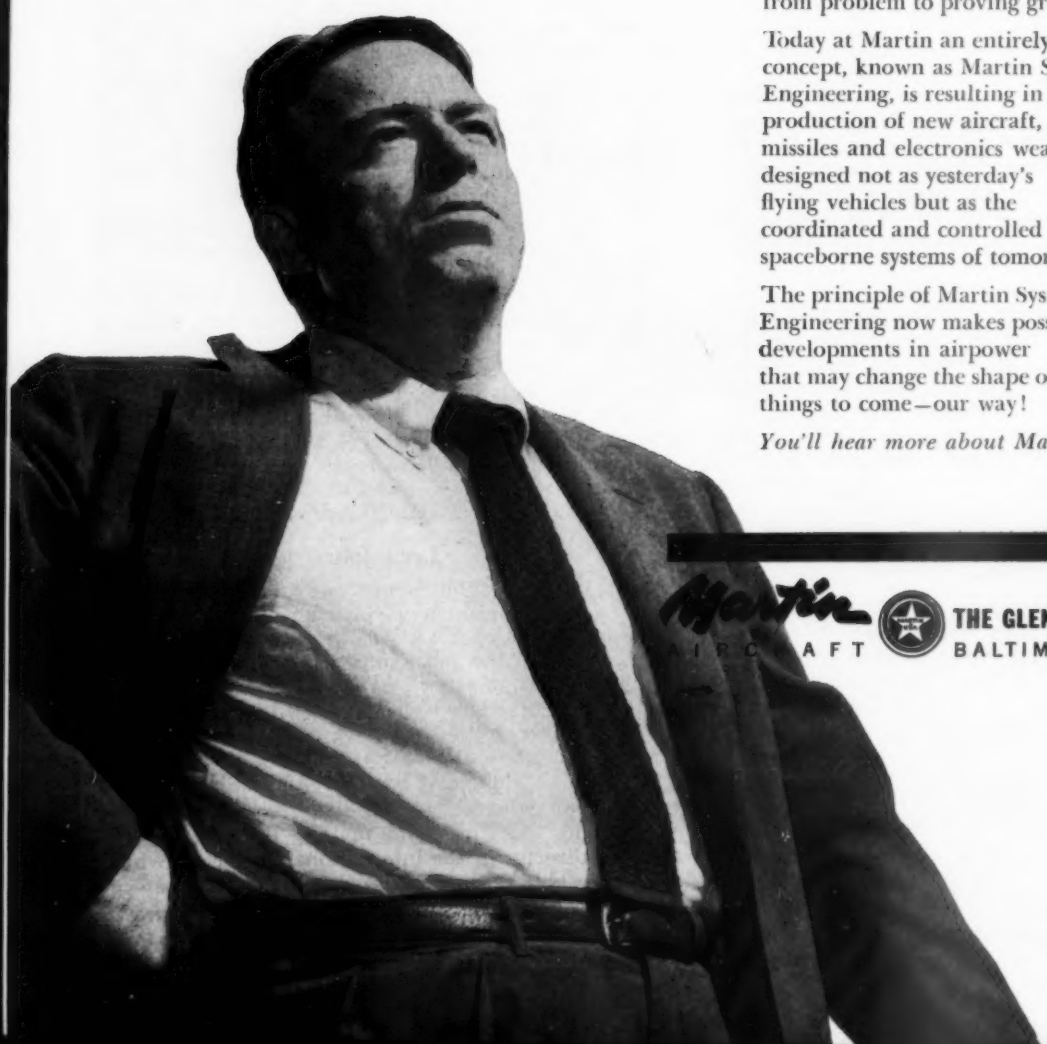

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take of transferring a tipster pet of an aviation magazine from New York to a post out west. The truth is, however, stripped of that sort of spiteful vengeance which doesn't add to the stature of the trade press, that Hensley was not tailor-made for the job and his transfer is to be good of both himself and the CAA. A man of considerable capabilities, he lacked certain of those qualities and characteristics which make for good and understanding administrators. His transfer should be no surprise as he had requested it himself quite some time ago.

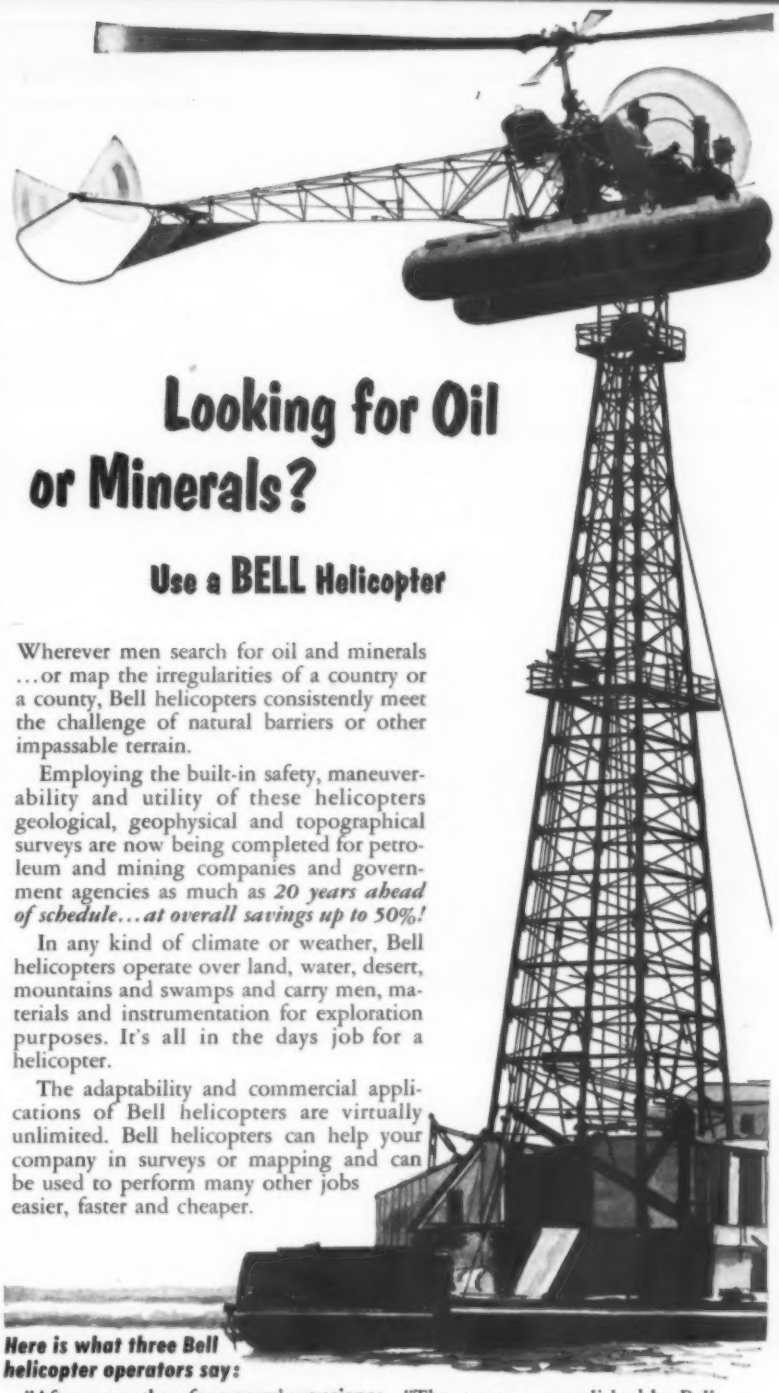
Al Koch is an old hand. He should be able to restore confidence and morale within a short time. He has a lot of sound ideas. Whatever changes he makes will be accomplished slowly. Being within two years of retirement, he has nothing to gain. In short, the Hensley-Koch switch is healthy all around.

Tiny Cloud

We think CAA is off to a reasonably good fresh start. As one of its severe (and, we hope, constructive) critics from time to time, we are prepared to give it a chance to rebuild morale and succeed in its new program. There is one tiny cloud on the horizon, however, which bears watching. This is the extent to which the Department of Commerce may be endeavoring to "run" CAA. Never before since CAA was moved into Commerce has the Department—in the person of Undersecretary Robert Murray—taken such a direct and active interest in CAA's destinies.

Under present statutes no one can question Commerce's authority on such matters as budget and policy. If this power extends to calling the shots for CAA in its normal administration, aviation interests as a whole will look with questioning and unfavorable eyes. We doubt if Mr. Murray really wants to run CAA—if he does, he shouldn't—but Mr. Murray has been giving an impression, by inadvertence, we hope, that his CAA activities may be extending beyond policy matters. If Fred Lee is to succeed as administrator he must have that position in fact as well as in name.

Beyond this tiny cloud, which we hope will dissipate in the strong morning sun, we think Fred Lee deserves a full opportunity to make a go at a job which is difficult under the very best circumstances. . . . WAYNE W. PARRISH.



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"Allied's Bell helicopters have done mapping and survey work intheRockies and Alaska at savings of 50% and more over other methods."—ROY B. DAVID, Allied Helicopter Service. Tulsa, Oklahoma.

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Industry Spotlight

The production model of the Douglas C-124 with turboprop engines has been designated the C-133. Radically different from the piston-engine-powered C-124, or even the prototype turboprop-powered version, the C-133 will have a high wing, truck level floor, new landing gear, and ramp-type loading from the rear, rather than the clamshell-type, nose-loading arrangement.

• •

Industry rumors that Convair is in control of Hiller Helicopters are incorrect. Actually Convair owns $500,000 in debentures in the west coast helicopter firm, but even if converted into stock it would mean less than 10% interest in Hiller. Purchase was made at a time when Hiller was raising money for expansion to undertake military contracts. But a closer relation could be established in the future.

• •

A new 4,000-pound-thrust, assisted-take-off rocket, the de Havilland Super Sprite, has an empty weight of 600 pounds, a duration of 40 seconds and total impulse of 120,000 pounds/second, against 55,000 pounds/second for the original Sprite from which the Super Sprite was developed. New motor employs hydrogen peroxide as oxidant with kerosene or gasoline fuel injection. Super Sprite uses a solid catalyst, a new development in peroxide rocket motor design, which eliminates the need for a separate catalyst, as in the Sprite.

• •

Temco Aircraft Corp. is testing a new McCauley Met-L-Matic constant-speed propeller on one of its Buckeroo trainers. The prop hub and blades are of forged aluminum. At present the prop is available for the Continental 225 horsepower engine, but McCauley Industrial Corp. plans to have both feathering and non-feathering models for the 135-350 horsepower range in the near future.

• •

United Air Lines is now conducting tests of a new airborne flight recorder which weighs 16 pounds yet provides 300 hours continuous recording of altitude, airspeed, vertical acceleration, time, and heading. Unit was developed by the mechanical division of General Mills, Inc., and is reported to be priced substantially below other flight recorders.

• •

Acme Aircraft Co. of Torrance, Calif., will soon flight test a new single-place pusher-type experimental plane powered by a Continental 85. Propeller of the new plane is tail mounted. Acme is the company which developed the twin Navion now being produced by Temco Aircraft Co. for Reilly Aircraft. The new Acme plane was designed by Walt Fellers and Ron Beattie.

• •

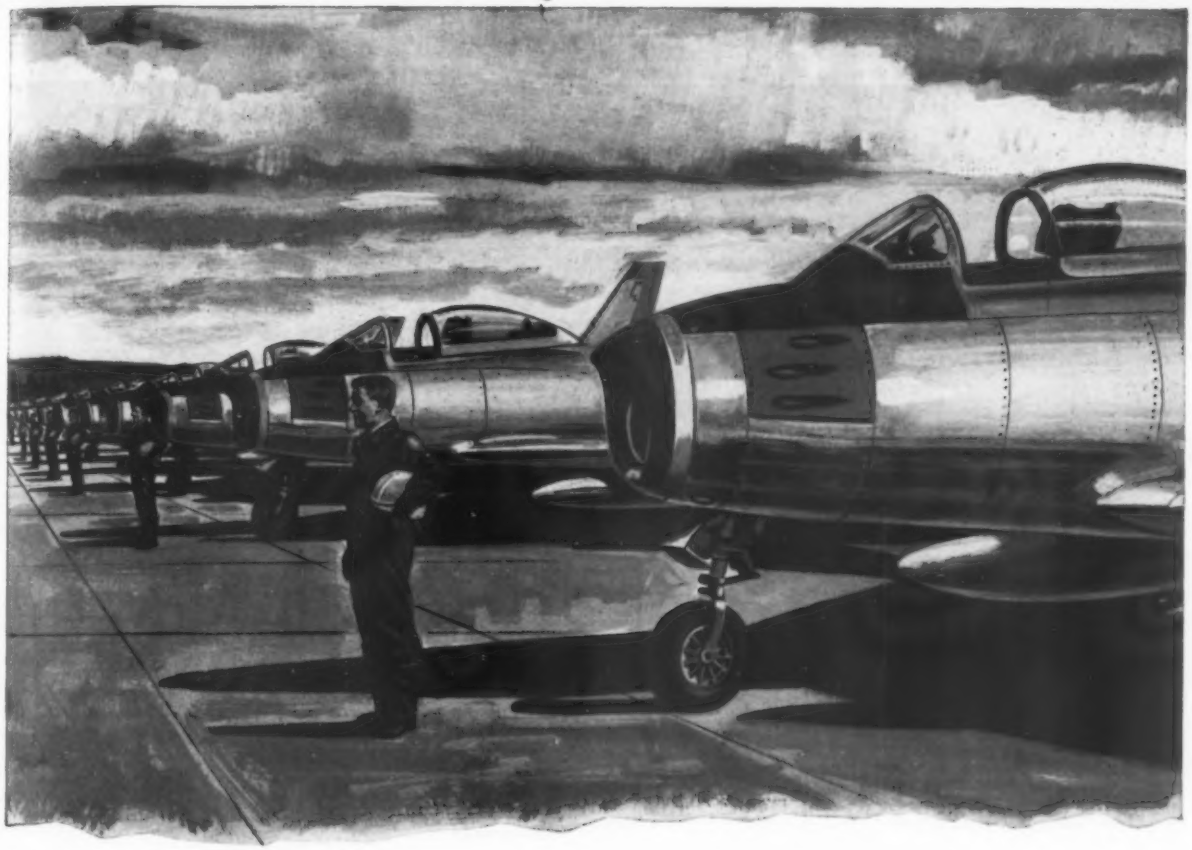
Longest non-stop overwater flights made by jet fighter aircraft without in-flight refueling were scheduled late this month by Republic F-84G's. Eight of the Thunderjets were to fly 4470 miles non-stop across the central Atlantic to Nouasseur, French Morocco. Twenty others, also originating from Turner AFB, Ga., will fly across the north Atlantic to Lakenheath, England, 4485 miles non-stop.

• •

A new twin Navion prototype has been developed by Darrell White of Associated Manufacturing & Engineering Co., of San Antonio, Tex. Designated the WE-1, it is powered by 225 horsepower Continental engines and has a cruising speed of 185 mph and rate of climb of 2460 feet per minute. It features 35 gallon wingtip tanks, and full-feathering constant speed Hartzell props.

• •

MISCELLANY: Two YH-21 Piasecki helicopters are now at Thule AFB in Greenland undergoing **Arctic Field tests** . . . Bell's X-1A supersonic research plane is scheduled to return to Edwards AFB early next month after **modifications to its nitrogen system** at the Buffalo factory . . . Lycoming-Spencer Div., Avco Mfg. Co. has developed a **new 150 horsepower four-cylinder engine** . . . USAF has officially cleared disclosure of the Northrop Aircraft **XB-62 Snark** pilotless bomber project . . . ILS has been installed in **18 airports** in Europe and Asia in the past year or will be soon, while VOR has or will soon be installed at **31 airports** in these areas . . . Lear, Inc., executive Lodestar, after undergoing a series of Lear-designed modifications, passed the **300 mph true air speed mark** during speed tests over Santa Monica Bay recently.



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American Aviation

VOLUME 17, NO. 7

PARASITE FIGHTER, Republic YRF-84F, prepares to be hoissted into the bomb bay of a Convair B-36 in new FICON system.

FICON: USAF's New Role for Old Bombers

Parasite fighter-bombers carried to target and retrieved may extend useful life of Convair's B-36.

By Harry S. Baer, Jr.

INDUSTRY SPECULATION about a possible new role for the ageing Convair B-36 will culminate in a dramatic demonstration of that role at the National Aircraft Show at Dayton, September 5 through 7, when the USAF unveils a new technique for fighter-bomber operations known as FICON.

The system involves slinging Republic F-84's beneath (and partially within) the fuselage of B-36's. Secured there, they could be carried to within striking distance of the target, at which point they would be lowered into flight position and would leave the bomber. The bomber, largest in the world, could then orbit beyond the range of enemy activity, waiting to retrieve the F-84 after it had completed its bombing or reconnaissance mission. The F-84 is able to carry the atom bomb.

The B-36, given new striking power by such an arrangement, would find itself with a new lease on its military life. Convair has maintained for some time that attempts to write off the B-36 as "obsolete" or "obsolescent" were premature. FICON promises to put new meaning into the remark of August C. Esenwein, manager of Convair's Ft. Worth division, who has stated publicly:

"The B-36 is and will remain for years the principal striking weapon of the Strategic Air Command. Moreover, when the B-36 has served its usefulness as a first-line bombardment and reconnaissance airplane, it will continue to be a formidable element in national defense because of its adaptability to other missions."

The B-36/F-84 combination will make two passes at Dayton. In the first fly-by, the Thunderjet will be tucked underneath the B-36 fuselage, only the bottom portion of the fighter being visible with the upper section of the body within the B-36. A short while later the linked pair will again make a pass, at which time the fighter will be released from the bomber at low level, possibly less than 500 feet.

Technical details of the connecting apparatus are being treated as classified

by the Air Force. A broad metal connecting beam apparently swings downward, however, from the B-36, through use of cables, providing a contact point for the F-84 a number of feet below the bomber fuselage. The jet can be "picked up" in flight by cruising close beneath the bomber. The extending beam keeps it far enough away from the bomber so the exhaust from the turbojet engine will not damage the B-36.

In releasing the parasite aircraft, the connecting apparatus is moved into "drop position," the fighter cuts in its jet, contact is broken, and the two planes separate. The two aircraft can land and take off while locked together.

FICON extends combat radius farther than ever before without use of in-flight refueling. With the B-36/F-84 combination, a mission of more than 5,000 miles could be readily accomplished. Range of the B-36 is more than 10,000 miles and combat radius of F-84 types are between 600 and 1,000 miles, depending upon the use of external fuel tanks.

Use of other makes of fighter craft, some possibly with greater range than the F-84, would seem to be feasible, although only the Thunderjet has been used in FICON at this stage.

Whether hauling an F-84 prohibits a B-36's use in such a flight as a bomber has not been revealed, although the Republic plane takes up only the space of about one of the bomb bays beneath the 10-engine bomber.

The Air Force is stressing the reconnaissance capabilities of FICON, and if the system meets wide Air Force acceptance for operational use, the new Republic RF-84F photo-reconnaissance plane, which has a wing root air intake system for installation of cameras in its nose, would probably be used.

Although the Air Force has not mentioned the combat potential of FICON, it is obvious that a jet fighter over enemy territory some 5,000 miles away from its home base would offer a new type of attack, one in which the element of surprise would be extremely favorable for a successful mission. At speeds of more than 600 miles an hour, the F-84 fighter-bomber would be much less vulnerable in an attack than the slower moving B-36.

In the FICON operation the fighter pilot, it is believed, would have to remain in the cockpit throughout the entire mission.

Also to be revealed at Dayton for the first time is a jet-to-jet in-flight refueling operation between a KB-47 Stratojet tanker and an F-84 Thunderjet fighter. • • •

Kenney Atwood LaPierre Garrett Getting

Warnings Sounded at AFA Convention

SOME 1500 Air Force veterans gathered in Washington, D. C., late this month to reminisce, review the military aviation picture, and swear in a new slate of officers as the 7th annual convention of the Air Force Association got under way. Elected to the presidency was General George C. Kenney, succeeding Western Air Lines' vice president, Arthur F. Kelly. Kenney's appointment highlighted the AFA's efforts to pacify those portions of the membership with strong "Asia-first" defense concepts. Straying from the usual generalities of symposium speakers, industry leaders appearing at the Airpower Symposium sounded some ominous warnings:

J. L. ATWOOD, president, North American Aviation—"It is essential to the success of our development programs that the Government award contracts as objectively as possible on the basis of genuine merit. The personnel responsible for procurement must put aside any ideas they may have been encouraged to develop in the past 20 years that they are social planners, economic stabilizers, or anything but hard-boiled customers . . . I am specifically asking for maximum realism in procurement competitions. Our efforts in industry will be most effective if the competition is tough, fair and clearly oriented toward product quality. There is a disproportionate premium attached to winning a design competition. It is the ticket of admission to the production show, but after all a design is just a list of promises based on calculations, which in turn are predicated on assumptions that can vary with the optimism of the designer. Rarely if ever have there been any real penalties when the glowing forecasts of the design proposal were adjusted downward to the physical facts of the actual airplane. And it is then too late to change. If the imposition of financial penalties for non-attainment of performance guarantees is the only workable answer, then I believe such penalties should be invoked."

C. W. LaPIERRE, vice president, Aircraft Gas Turbine Div., General Electric—"In my opinion, research and development organizations should always be primarily interested in exploration which leads to establishing principles. They should not attempt, by themselves, to direct the course of aviation progress. . . . Research and development organizations should work with the industry by establishing limitations and principles; they should anticipate problems and solve them. But they should leave the final design and all the decisions that go with it to the designer."

J. C. GARRETT, president, The Garrett Corp.—"The component industry is one of the most competitive and highly specialized segments of our industry, and it represents in the future air power strength of this country one of the greatest reservoirs of specialized skills and know-how that we have. Let us not adopt any system of procurement or planning that will injure or deter the initiative or competitive spirit of this industry. Let us give due recognition to the patent and reproduction rights of those manufacturers who have developed their products with their own research money."

DR. IVAN A. GETTING, vice president, Raytheon Manufacturing Co.—"Over the long haul we shall stand to suffer in qualitative superiority unless effective steps are taken to continue direct contracting between the Air Force and the electronics industry, not only on new components, and techniques, but also for major elements . . . I sincerely hope that the Air Force will approach their new weapons systems contractural policy with care, and that the Air Research and Development Command will continue along the lines of relaxing on channels of communications between contractors and the using branches of the Air Force . . . and above all zealously guard the long-term projects and their research programs and support component developments."

Wilson Outlines Job Of Defense Assistant

Ever since Defense Secretary Charles Wilson established six assistant secretary posts to cover key areas of responsibility in the new defense organization, the industry has awaited some sign of the scope of the defense aides' responsibilities. Singling out the post of Assistant Defense Secretary for Supply and Logistics, now held by former Navy Under Secretary Charles S. Thomas, Wilson in mid-month approved the first such charter, making Thomas responsible for:

- **Periodically reviewing** the equipment used by the various services;
- **Making recommendations** for regrouping, combining, or dissolving existing interservice agencies of procurement, production, and distribution:
- **Eliminating** unneeded duplication and spending in the supply and logistics fields;
- **Determining** relative priorities of items procured by the Army, Navy, and Air Force;
- **Reviewing** military requirements for basic materials;
- **Making recommendations** on joint purchasing of items used by all the services;
- **Devising policies** covering procurement scheduling and planning;
- **Appraising strategic plans** in terms of available materials, end items, components, and support, thus helping to modify strategic plans.

Wilson's charter for Supply and Logistics, while broader than that held by the old Munitions Board, does not create the "procurement czar" which Congress has often urged. Nonetheless it is evident that the new assistant secretary has a very broad area of responsibility, which could bring about many basic changes in current military policy.

U. S.–Venezuela Bilateral Pact Signed

A bilateral air transport agreement between the United States and Venezuela was signed in Caracas on August 14. It notably enables Pan American World Airways to operate non-stop flights between New York and Caracas. In return, PAA will sell its airport property at Maturin, Barcelona, and Coro but will be absolved from paying landing fees until after 1960.

The agreement also permits Delta-C&S to operate a daily service between Havana and Caracas. Venezuelan airline service to Miami and New York, as well as to New York, is authorized. It is understood, however, that Linea Aeropostal Venezolana has no immediate plans to serve any U. S. points other than New York.

In effect, a third engine is provided by two Westinghouse J34 jets slung beneath the wing of this Lockheed P2V Neptune patrol plane. The jets, which produce 3400 pounds of thrust each, at take-off speed will be the equivalent of one of the Wright Turbo-Compounds regularly installed on the P2V. Speed of the modified Neptune is "much higher," rate of climb on take-off is doubled, runway requirements are cut. Installation is being tested on two aircraft.

AF, Navy Divide Turbine Engine Work

An important but unannounced shift in turbine engine development policies among the U. S. military services appears to be shaping up: the U. S. Navy is taking over most turboprop engine development and is apparently leaving the core of turbojet engine development in the hands of the U. S. Air Force and its contractors.

Officially the USAF and the Navy deny that any such developments are part of an agreed-upon plan. As a matter of fact, the USAF is still backing development of Curtiss Wright's T47 and T49 turboprop engines, engines based on the J65 turbojet and with horsepower ranging from 8500 to 10,000 horsepower. It is also behind two small turboprop developments, the Continental T51 (a development of the 880-pound-thrust J69 Mabore turbojet) and the Lycoming T53.

But the trend toward splitting turbine engine development is highlighted by several prominent facts:

- **No Navy engine** with a designation higher than Pratt & Whitney's J48 has shown up for a long period, while the AF's odd-numbered engines continue to climb: General Electric is working on the J63, J73, J77, and J79; Curtiss-Wright has the J65 and J67; Continental has the J69; Allison the J71 and P&W the J75.
- **The U. S. Air Force** abandoned work on the turboprop Curtiss-Wright T35 and the General Electric Turbodyne T37. Meanwhile the Navy proceeded with work on the P&W T48 and T52 and the Allison T54.
- **All USAF turboprop-powered aircraft** announced to date use Navy engines. Lockheed's C-130 is powered by the Allison T56, as are the Convair-Liners. The Lockheed L-1249 Super Constellations, Boeing C-97's and Douglas YC-124B's are powered by the Pratt & Whitney T34, and the McDonnell F-88B's by the Allison T38.
- **Although development work** on the Westinghouse J40 engine continues, the Navy's plans for many of its forthcoming aircraft are based on USAF-sponsored turbojet engines, including the P&W J57, Allison J71, and Curtiss-Wright J65 and J67. There have been specific shifts from the Navy's J40's to these USAF engines.

The obvious tendency to delegate turboprop engine developments to the Navy was further highlighted in USAF budget testimony, during which officials explained the cancellation of the T35 with the comment: "The development contract was terminated in order to conserve funds since the AF decided to rely on Navy developments in this area . . ."

Civil Reserve Fleet Details Distributed

Details on routes, stations and planned frequencies of flight for the Civil Reserve Air Fleet have been set up in classified reports, compiled following Pacific and Atlantic coast meetings among airline representatives, MATS, and the Defense Air Transportation Administration.

The CRAF operations and logistics support reports also include operational plans, equipment, material to be stockpiled, and essential manpower requirements. Copies of these reports are now being distributed to members responsible for CRAF planning who have been cleared for security.

World's fastest photo plane is the description of this version of the Boeing B-47 Stratojet. Designated the RB-47E, the long range photo aircraft is being built especially for its job. A similar version, the RB-47B, can be used either for photography or bombing. A longer nose and an air-conditioned camera compartment set the RB-47E off from the standard Stratojet. The convertible camera planes are fitted with a pod of photographic equipment which will fit into the bomb bay.

PAA to Be Target of Anti-Trust Suit

The Anti-Trust Division of the Department of Justice is preparing to file a civil suit against Pan American World Airways and W. R. Grace & Co., to break up their 50-50 control over Pan American-Grace Airways.

The proposed action, which reportedly needs only the final approval of Attorney General Herbert Brownell, Jr., has been in the mill since 1945, although it has been a closely guarded secret.

Panagra's stock is evenly divided between Pan American and Grace. Each has four men on Panagra's eight-man board of directors. Many times over the past 12-15 years Panagra has been unable to take affirmative action, particularly on route bids to CAB, because of the corporate set-up.

Charges are that either of the co-owners is in a position to exercise "negative control" over the company, in apparent conflict with the public interest.

The eight-year-old anti-trust action was brought to its present stage by an exchange of correspondence between Justice and CAB in which Justice, by letter of May 28, 1953, asked CAB if it still wanted action in the case, and CAB, by letter of July 7, 1953, answered that it did.

The correspondence has not been made public. The Justice letter was signed by assistant attorney general for anti-trust Stanley N. Barnes; the CAB letter by Chairman Oswald Ryan. Such CAB letters reflect the desire of the majority of Board members, with the signature of the chairman a customary formality.

CAB turned the matter over to Justice originally in 1945 after years of fruitless effort to resolve the situation. Main point of dispute at the time was Panagra's inability to get approval from the Pan Am half of its directors for filing of an application to extend its routes north from Balboa to Miami and New York.

CAB, at the time under the chairmanship of L. Welch Pogue, felt the stalemate was against the public interest and considered itself without jurisdiction to cope with the matter. The Board's request to Justice was, in effect, that it break up the monopoly and resolve what the Board considered a "restraint of trade."

Although a case was immediately drawn up by Justice, the changing of CAB chairmen (James M. Landis replaced Pogue) resulted in a Board request for Justice to drop the case. Thereafter the well known through flight agreement was reached which permitted Panagra to fly its planes over Pan Am's Balboa-Miami route.

But on October 3, 1951, CAB voted to renew its plea to Justice. Accordingly, under letter of October 3, 1951, signed by then-chairman Donald W. Nyrop, the Board claimed that the same conflicts existent at the time of the 1945 request still prevailed, and the trackage agreement was not the final solution it was originally believed to be.

Justice's anti-trust division, headed by James Kilday, then set about polishing up the case against Pan Am and Grace. Attorney Samuel Karp of Kilday's division was assigned the task. He prepared the case, sent it to the then-Attorney General Howard McGrath, but never got a final go-ahead.

The process was repeated with McGrath's successor, Judge McGrannery, but with the same result.

The case was held over for the new administration, thus leading up to Barnes' May 28, 1953 letter and CAB's July 7 reply. Ironically perhaps, the case has become alive again at a time when Grace and Pan Am, perennial fueders, are fighting hand-in-hand to win CAB's complex New York-Balboa Through Service Case.

News Briefs

The world's first scheduled international **passenger helicopter flights** will start on September 1 when SABENA Belgian Airways inaugurates the service. The line has been carrying mail since early in August.

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Fairchild Engine & Airplane Corp. is **taking inventory at Kaiser Motors,** Willow Run, on supplies and assemblies earmarked for 88 C-119F's that Fairchild is slated to take over for production. On completion of inventory, expected in October, all materials will be shipped to Hagerstown.

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In 37 months of Korean War, Far East Air Force says U. N. planes shot down 839 MIG-15's, probably destroyed 154 and damaged 919. Reds also lost 1020 piston-engine planes, 182 probably destroyed and 1010 damaged. U. N. lost 1000—110 in air-to-air combat, 677 to ground fire, 213 to "other causes."

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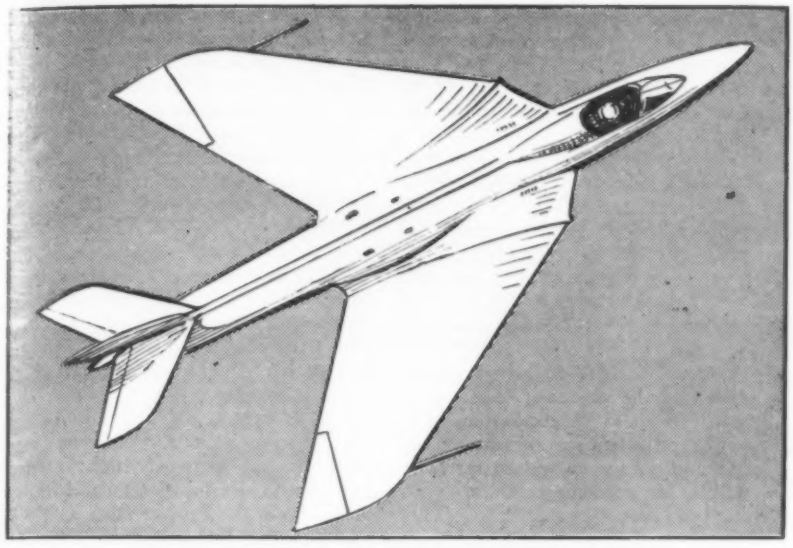
Transocean Air Lines received one-year **extension of airlift contract** in Trust Territory of Pacific Islands, 3 million square mile ocean area fanning out from Guam. Contract calls for weekly scheduled flights to island centers plus emergency flights. TAL will replace present PBY Catalina planes with Grumman Albatross amphibians.



HAWKER HUNTER with 60° sweep is expected to be one of the feature attractions at Farnborough this year.

New Fighters Make Bow at Farnborough

Hunter and Swift expected to star at annual exhibition; variable-sweep Short S.B.5 also due.

By Castle Wood

LONDON, ENGLAND—The accent will be on fighters and bombers at the 1953 Society of British Aircraft Constructors' show and flying display at Farnborough, September 7-14. If they fly in time, the highlights of this year's Farnborough may well be the super-sweep Hunter and Swift; both prototypes are already many months overdue. Their sweep is reported to be 60°, which might make possible level supersonic flight at altitude with afterburner cut in, giving flight equivalent of 15,000 pounds sea level static thrust.

In addition to developing these super-sweep versions, Hawker and Supermarine have devoted much effort to improving the original Hunter and Swift. Too much slimming has affected the Hunter's performance, however, and there is not enough fuselage space for afterburner fuel or gun debris. Afterburner power is essential for interceptor specification climb. Talk continues of under-wing, slipper-shaped fuel tanks and cartridge collector boxes.

The Swift, with a fuselage designed for a Nene centrifugal-flow engine but housing only an Avon axial-flow powerplant, has plenty of fuel space. Wing modifications, including double fences and increased aileron boost, have overcome transonic and landing behavior criticized by the USAF's evaluation team. Gun debris boxes may be added.

Farnborough will reveal the Hunter F 2, with the Sapphire. This is said to be faster than the Avon-powered F 1, but it looks the same because government policy dictated that these large jets should be interchangeable. The Swift F 4 will also be available for inspection from a distance.

Although Hawker and Supermarine say "No," Gloster says "Yes" to the question of whether the trailing edge should be filled in to make a delta when there is a heavy sweep. One of the five pre-production prototypes of the Gloster Javelin delta all-weather fighter will be flown. U.S. visitors have been impressed by Javelin design for production, but not by the progress of preparations for the production line at Gloster's Brockworth plant.

Gloster hopes to have ready, and be allowed to show, the Javelin with the revised large-area wingtips. This has a compound sweep (as on the SAAB Draken, but less accentuated) and the reduced thickness/chord ratio is said to have raised the critical Mach number above .9. Surprisingly, the tips are still rounded and are not of the "pressure-recovery" shape, as on the Hunter. A new cockpit hood and "slipper" tanks under the nacelles are featured.

The D.H.110 is now a probability rather than a possibility for naval use. The low-speed flutter mode that caused the crash in which John Derry was killed has been traced and cured—presumably by stiffening the wing's basic structure.

Another Navy type will be a Supermarine type, for which an off-the-drawing-board order has been placed. This is a development of the Type 508 with a swept wing and a conventional tail. Navy interest lies in the twin-Avon layout because it gives high take-off and climb thrust with economy of single engine cruise.

The usual collection of statically displayed variants of old types will appear: Gloster P. V. Meteor; D. H. Vampire/Venom variants; the production Hawker Sea Hawk, with the stabilizer intersection snout that has cured tail flutter; and the evergreen Westland Wyvern, production version. Fighters which will *not* be there are the big English Electric delta and the Folland Gnat stripped-down fighter.

Research

Most interesting experimental type is the Short S.B.5 with adjustable sweep, which just missed Farnborough last year. This will be flown with the wing in the second, or 60°, position. Built for low-speed research, mainly into landing and take-off possibilities with large sweepback, the S.B.5 is intended for the benefit of all government contractors, not just Short. It does not presage any new Short type, but is a forerunner of future fighters from other firms.

The chordwise ailerons are significant as part of the designer's search for something to roll the airplane without twisting the wing at high speed or losing effectiveness at low speed.

With a 3500-pound static thrust Derwent, fixed landing gear, and mixed construction, the S.B.5 is a cheap research vehicle, which must already have paid off in less than 12 months testing. Droop snoots, backward-radiusing split flaps, and large-range adjustable stabilizer, with alternative high and low positions, will each be subject to test programs.

Unfortunately, although ready to fly, the Short S.B.4 does not qualify, since it has foreign engines. This is a rebuilt version of an experimental glider having the aeroisoclinic wing and rotating wingtips for both lateral and pitch control. The swept-wing structure is designed to flex without twisting under all flight conditions.

In order to avoid torsion loads due to the ailerons, these are pivoted on the wing torsion axis so that they can be deflected differentially and in unison without affecting wing incidence in any way. This model is very sleek and with two Turbomeca Palas jets should be fast enough to give representative trials of wing and controls.

Fairey is trying hard to get the F.D.1 delta airplane ready either for static exhibition or flight. Because of

super-priority for the Gannet, this has been allowed to lapse since its early trials in 1951. It has recently completed its acceptance tests at Boscombe Down and is doing a considerable amount of flying. Originally its resemblance to the V.T.O. delta models was so close that the inference is obvious.

The revamped Boulton Paul delta, the P.111A, will show its near-sonic paces. This aircraft now has new "four-door" air brakes on the fuselage near the leading edge. The second airplane, the P.126, with a stabilizer for comparative handling tests, lost its tail with flutter just before the last display.

First production Vickers Valiant is about ready and is expected to fly. A prototype with the 9500-pound static thrust Rolls-Royce Avon RA 14 is also expected, but the difference will not be obvious.

Although fairly conventional in appearance, the Valiant was the first full-scale crescent-wing design. The forward-swept root keeps M_{crit} high over the thick engine and landing gear bays, while the very thin, almost unswept, outer wing sections have similar M_{crit}. The two-spar center section, stiff in bending but not in torsion, coupled to torsionally stiff outer sections, gives a semi-isoclinic effect.

It is reliably reported that the Valiant's range is greater, with full bomb load, than that of the Boeing B-47. Flight Refuelling Ltds.' tanker pack fits the bomb bay of the Valiant.

Crescent Wing

Most loudly publicized crescent wing is the Handley Page HP.97 Victor. This ugly duckling was built to exactly the same requirements as the delta Avro Vulcan (that is a Mach .9, stratospheric, deep-penetration bomber) and so it must do the same job, at least on paper.

This crescent wing has three sets of thickness/sweep ratios. Massive box spars, mounted well forward in the chord, are used for the inner portions. The innermost box carries engine intake openings, the engines being mounted aft. The next section is a thinner box, but of greater chord; the main landing gear is slung to the rear webs. Slotted extension flaps between ailerons and fuselage, with droop snoots on the thin outer section, give a high C_{lma}.

With rear-fuselage air-brake doors open also, there is a great deal of drag. Electro-hydraulic power controls are fitted. The high tail has practically no stabilizer and is almost all-moving, with a large leading-edge balance area.

The cabin is large, with visual bombardier's panel, but no radome, and is fed from compressor bleed. Double-chin crew compartment is a tryout of double-deck cabin of H.P. 97 civil transport project.

The production model is expected to have a longer fuselage with a raised cockpit hood, like the Valiant and Vulcan. The stabilizer is expected to be lowered in conformity with that on the H.P.88 flying model.

The second prototype Avro Vulcan is more likely to come than the first. A great deal of flying has now been done and everybody seems well satisfied. An emergency tail chute release at 20 feet, resulting in a complete stall, caused no damage to the airplane. Range/bombload performance is said to be similar to that of the B-52.

The 707C delta trainer is simply a version of the perennial scale model designed for pilot familiarization. The cockpit hood is similar to that on the Vulcan and swings up and aft for entry as well as for jettisoning.

Transports

This year there will be no new turbine transports, just repeat showings of the Comet, Viscount, and Britannia. An Air France Comet 1A is to appear in the static display, while the first production Series 11 will fly over. The prototype Comet 1, with Mark 3 additions (that is, projecting wing tanks and straight trailing edge) will not be shown, though it is nearly ready for flight.

The Britannia 100 prototype now has its Proteus 705 (Mark 3) turboprops with more shaft horsepower and considerably more jet thrust. To take advantage of the latter, the jet pipes point aft along the tops of the nacelles. Models only will be seen of the Type 200 freighter and the stretched-out Type 300.

Other transports will include the long-nosed Bristol Freighter, stalwart of the cross-Channel automobile ferry, and the Blackburn and General Aircraft Beverly, the Mark 2 version of the Universal Freighter.

The Series 2 Heron with retractable undercarriage will be demonstrated by de Havilland. Although 20 Herons have been built and 50 are in order, the Series 2 has not yet attracted clients. De Havilland is expecting North America to buy it as an executive transport. The Series 2 DHC Beaver (L-20), with an Alvis Leonides engine, is to be on show, with Army orders as the target. Given these, a British production line will be laid down with a view to soft-currency sales.

The first Saro Princess, whose fate along with her two cocooned sisters lies in the balance, is to fly over Farnborough. This solitary example of a modern British flying boat has recently done several full-load take-offs. There is hope that when the Proteus 3 engines are available to give full power, an RAF transport unit will be set up to use these three fine boats.

Similar case is that of the Scottish Aviation Prestwick Pioneer, of which a production model from the series of 20 will fly. The RAF has bought these for jungle communications in Malaya, where, with their flaps and slots, they will supplement helicopters.

Percival will have a virtual monopoly on trainers if one excludes the specialized Avro 707C. It will demonstrate the Provost basic trainer. This has recently undergone intensive flying trials with the RAF Central Flying School and achieved remarkable utilization. It is popular with the ground staff because maintenance is easy, and in the air it is excellent.

It is easy to fly, but requires constant attention if it is to be flown *accurately*. It has extremely light controls and should develop good hands. Characteristics of the Provost mate well with the Vampire T.11 advanced trainer.

The "jet Provost," the P.84, with Armstrong Siddeley Viper 2, is being built for comparative service trials. It is to be as nearly as possible the same as the Provost, wings, tail, and cockpit, but with tricycle landing gear, short nose, and engine in the rear of the fuselage. Upon the results of trials depends the RAF's all-jet training policy.

Naval Aircraft

Fairey's will show the production Gannet anti-submarine airplane. This, with its three cockpits, looks much like the third prototype flown last year. Actually, because of new Admiralty requirements, changes in war load, the extra crew member, new radar, etc., only 25% of the original prototype structure design remains. This fact led to almost complete retooling, and consequent waste of the original envelope jigs, and put back production by nearly two years.

Shorts Bros. are hoping to fly their extra-conventional S.B.6; it will certainly appear statically. This is a very ordinary-seeming airplane with a single Armstrong Siddeley Mamba. It is not fast, but is meant for true all-weather operation from light fleet carriers. It can carry fuel for several hours and the usual sonobouys and depth charges.

The turboprop can scarcely be ideal for a slow airplane, but it fits with Royal Navy policy to use only one type of fuel, if possible, for ships and aircraft—the Mamba is cleared for flight on marine diesel oil.

Space does not permit more than a passing reference to rotorcraft (models of designs meeting British European Airways' specifications will be the main center of interest), engines and guided missiles, but full coverage of these items will be included in AMERICAN AVIATION's report on the Farnborough show.

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SUPER CONSTELLATION PROTOTYPE—commonly known in Burbank as 1961—keeps changing with the times. Here's how it looks now as a test vehicle for the bumps and bulges that identify the early warning configuration of the famous transport. It includes the tip tanks which will provide additional range for the Navy WV-2's and Air Force RC-121C's now coming off the Lockheed line.

New Radar Connies Ordered by USAF, Navy

Production started on early-warning Constellations for both services; 12,000 pounds of electronic gear.

By Fred S. Hunter

RECONNAISSANCE VERSIONS of the Turbo - Compound - powered Super Constellation transport, specially fitted for flying radar station duty, are now in production both for the U.S. Air Force and the Navy at Lockheed Aircraft Corp.'s Burbank, Calif., plant.

The USAF lookout planes are designated RC-121C. The Navy calls its version the WV-2. Latter is the successor to WV-1's used to test and develop aerial radar searching for the past three years.

Announcement that production is under way was the first official report that the Air Force as well as the Navy has ordered picket planes.

WV-2's will be operated by the Navy from land bases, but used primarily to screen U.S. fleets. They are equipped to serve also as control centers to guide carrier-based fighter planes in the interception of enemy aircraft beyond the radar reach of surface information-center ships.

Similarly, the RC-121C's are expected to be used to bolster USAF air-defense forces by providing extra-early warning of approaching enemy aircraft and add to interceptor effectiveness by directing defending planes to their targets.

The Lockheed radar planes, packing more than 12,000 pounds of electronic gear, will be a new shape in the sky. Protruding from the top of the fuselage is an eight-foot-high structure resembling the dorsal fin of a sailfish. It houses a height-finder radar antenna. Mushrooming from the bottom is a bowl-shaped radome described as probably the largest plastic part ever built. The radomes are made by Zenith Plastics Co., Los Angeles.

Powered by four Wright Turbo-Compound engines rated at 3250 hp each, the aerial sentries will possess the range and altitude capabilities of commercial Super Constellations. Tip tanks carrying extra fuel will give added range. Despite the bulging radomes, speed will approximate the 335 mph of the transport version.

Storm Warnings

Besides its high-altitude lookout duty, the new electronics plane will be able to track weather disturbances by radar and improve storm warning services.

Facilities for a crew of up to 31 men are provided. Each plane will carry a complete electronics maintenance shop and a team of technicians to make in-flight adjustments and repairs.

Cabins are soundproofed and pressurized to maintain 10,600-foot comfort at a 25,000 foot altitude. Bunks for off-duty crews and a galley for meals aloft are included.

The Navy pioneered in airborne radar warning techniques using two earlier Constellations converted into WV-1's. On the basis of WV-1 performance, Lockheed was assigned to develop an entire new "weapons system facility" around the enlarged Super Constellation.

Among major scientific accomplishments in designing and building the ships, according to Hall L. Hibbard, Lockheed engineering vice president, are the development of large aerial antennae; attachment of these antennae to the exterior of an existing aerodynamic shape without materially affecting its speed, range, take-off or maneuvering characteristics; and arrangement and integration of a vast assortment of electronics equipment into the confined shape of an airplane in such a manner that it can be conveniently utilized by dozens of men and is readily accessible for maintenance during flight. • • •

Report CAB Approval Of EAL-CAI Merger

The CAB has voted to approve the merger of Colonial Airlines into Eastern Air Lines, according to reliable sources. Vote is still unofficial pending the writing of a formal opinion and the signing thereof by the Board members. It will not be made public for some time because White House approval will also be necessary.

The Board heard oral argument in the case on July 28, and voted at a private Board meeting shortly thereafter. Exact vote is not yet known but positions of some members, if not their final votes, indicated dissents existed.

Involved in the case, in addition to the Eastern-Colonial merger agreement, is a CAB-instituted investigation into a possible Colonial-National merger and charges of National and CAB's bureau counsel that Eastern had "illegal prior control" of Colonial.

The proceeding becomes a White House matter because of Colonial's international routes involved in the proposed transfer. It is expected to be submitted by CAB to the White House sometime "during September or October."

Interview

with

Donald Douglas, Jr.

Vice President

Douglas Aircraft Co.

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Manufacturing Trends and Prospects

Donald W. Douglas, Jr., vice president in charge of military sales, directs flight testing as well as controlling parts sales and the global service organization of the company.

Born in 1917, he studied at Stanford University and Curtiss-Wright Technical Institute before joining Douglas Aircraft in the engineering division. Six months later he moved to the DC-3 project, where he began what was to prove to be a long association with engine installation problems. He subsequently worked in the power plant group on the prototype DC-4, directed test stand operations for the DC-4, and took charge of the installations on the C-74 Globemaster.

Testing on a variety of military and commercial aircraft was conducted under his direction, including work on the D-558 Skystreak, the XF3D Skynight, and the DC-6 series, including the -A and -B.

He is married and the father of two daughters.

Q. Would you comment on the likelihood of the turboprop-powered long-range aircraft preceding comparable jet transports in commercial service?

A. There is no doubt that the turboprop for long range is a very efficient power system, but unfortunately due to the pressure of jets for fighters and bombers, turboprop development is quite a bit behind the jet. Therefore jets may see commercial use before turboprops. That doesn't mean that there is not a need for a turboprop transport.

Q. You mean that the emphasis put on the turbojet by the military has given us much more experience in the turbojet engines than we have in the turboprop?

A. That's right, plus such refinements in development as twin-spool engines, where you get improved fuel consumption. The pressure is first to get that on jet engines and second on turboprops. Because of this, the jets show better efficiency in comparison with the turboprops than they would if they both had the same class engines, same pressure ratio, and same class of specific fuel consumption.

Q. Is it your judgment that a commercial turboprop transport might await development of the two-spool engine or some other refinement?

A. There is no doubt that it would have cheaper costs per seat-mile or ton-mile if it were more economical, although even the present type of turboprop, because of the fact that it wants to fly at high altitude and a high percentage speed, can be shown to be cheaper than the reciprocating engine airplane. So there still might be sufficient incentive to come out with a single-spool turboprop commercial transport, even though it might not be the ultimate in efficiency.

Q. Do you know or would you estimate how many flight hours have been logged by turboprop engines around the world in the over-3500-horsepower category?

A. I can't believe there are over 1000 hours logged here and in England. The only engine I know of in England that has had much time around that power is the Double Mamba installation in a British airplane that is somewhat like our A2D, a Navy airplane. All the projects here with the Allison T40, which is the only engine around that class now flying in this country, have been held up by engine difficulties.

Q. What does Douglas see as a realistic minimum development price for private development of a four-engine long-range jet transport?

A. Well, it depends upon what you mean by development costs; if you mean all the costs to not only develop a prototype, and flight test it but also to build your tooling, the costs are certainly above the $35 million mark. It could run as high as $60 million.

Q. Beyond this development cost, how much money would the manufacturer have invested before the delivery of the first production plane?

A. The best estimate seems to be around $60 million to deliver a production transport.

Q. What does Douglas see as a possible domestic market for a four-engine jet with approximately a 1500-mile range in 1960 or 1965?

A. Because of the jet's speed and its size it can carry many more people per day, so it looks to us as though a much lower number of jets can be used than, say, the DC-6

Jet transport aim: 'Match DC-6B costs.'

or Constellation type. A hundred airplanes looks like a lot of jets to us.

Q. Well, of course, the jet transport will not have the flexibility of the DC-6. Do you think the jet would be a practical airplane between, for example, Los Angeles and San Francisco?

A. It is our theory that if it isn't a practical airplane between here and San Francisco then it is not a practical airplane. It has got to have close to the same capabilities as the DC-6 for both long and short range or else the market for jets gets to be extremely small. This is one of the reasons, of course, that we have not rushed in to build one.

Q. Is it your belief that the first jet market will be in the trans-Atlantic field, say the international field?

A. You must design your jet transport so that it can do both the over-ocean and the domestic job. Because of the engine size situation—the availability of large turbojet engines—the airplane easier to build is a domestic airplane; but the pressure in some respects is greater internationally in order to compete with the Comet.

Q. I take it from your answer that you are not being subjected to very much pressure from the domestic airlines to provide them with the jet transport.

A. That's right. The domestic operators are not rushing; they don't look for jet operations until about 1960.

Q. Can we predict then that Douglas is pretty sure to have a jet transport by 1960?

A. Well I think you can say this: Douglas has always tried to have an airplane when the market was there, at the right price to make money for the airlines, but we are not going to have it any sooner than there is a market for it.

Q. The price of these jet transports has been estimated at $4 or $5 million per unit. Do you think that this is a realistic price?

A. There is no doubt that they can cost that much. The engines alone will cost nearly as much as a DC-6.

Q. Your aim in your jet transport design then, is to match DC-6B costs?

A. Yes. Maybe we did too well in the DC-6B. Its costs are without a peer in the world, and we have set a real tough job for ourselves to match it. But the airlines feel that we must match those costs and that fares cannot go up.

Q. In competing with the British jet transports, what would you say would be the principal feature in which your airplane might be superior to the British transport?

A. Well, I don't see how we can beat them by lower airplane costs. We do think we can beat them by lower operating costs because the British airplanes we know about so far have much too high seat-mile costs to operate in the same fare structure as the DC-6B, plus the fact that they have all too short a range.

Q. What's Douglas' position on the prototype bill at this time?

A. We don't think that the prototype bill is the answer. We are not sure that the prototype bill would not get somebody in the business that really would not have the money to carry it on after they got in. You shouldn't go into the jet transport business unless you have the money to carry on the whole development. We would much rather have orders for airplanes than any prototype bill.

Q. Is the Department of Defense asleep in this whole matter of transports for logistic support?

A. No, not at all. The fact is they are very wide awake on this issue. They are buying quite a few new type logistic transports. In a manner of speaking, the jet transport can do the logistic job, although its job for the military would be primarily for high priority cargo and passengers. I think there is no doubt that sometime the Department of Defense will buy jet transports.

Q. Has Douglas suffered any curtailment in the C-118 or C-124 production under the recent defense cuts?

A. No, neither cutback nor stretchout.

Q. The turboprop C-124B was supposed to have flown some months ago. What has been the delay?

A. Well, there was a delay in the engine availability originally, and then there have been some delays on our own side: in running some static tests and actually finishing the airplane.

Q. That hasn't been a high priority project, has it?

A. Well, it hasn't been a break-back type, Korean priority, but there is a great deal of interest in the Air Force in getting a lot of turboprop airplanes in the air. We had to give more priority to our production at Long Beach and we ran a static test and improved the gross weight of the production C-124 before we ran the static test on the C-124B, so from that standpoint it didn't take priority over production.

The Heat Barrier

Q. What is the next area of pioneering, beyond the sonic barrier, by the aircraft manufacturers?

A. The next place that poses a real serious problem, of course, is the heat barrier, and this is quite a different and more difficult problem than the sonic barrier.

Q. Well that's a barrier for man-piloted aircraft.

A. It is really a barrier for manned, unmanned, or anything that has to operate in the atmosphere. You don't go through it; the faster you go the hotter you get in our atmosphere, and you never can dodge the problem.

Q. Do you see missiles production as branching into a completely separate industry, one more allied to the munitions than the aircraft production field?

A. No, we feel missiles are nothing but unmanned aircraft in most cases—the same aerodynamic problems, the same powerplant problems, the same hydraulic problems, and the same control problems that we have in airplanes.

Q. Douglas is taking a wide interest in missiles?

A. That's right, yes. We are working closely with specialists in the electronics field. We are very, very heavily in the missile business and we expect to stay there.

Q. Douglas built a missile plant in Santa Monica recently; do you think you will be building any more?

A. We did add a big building at Santa Monica specifically for missiles. So far we have integrated the missile work right into our regular work and have not separated it into a separate organization as some others have.

'Douglas is looking at a brand new turboprop'

Q. What do you feel about contraction of the second-source programs?

A. In the case of the B-47 where a great number of airplanes were wanted in a rather short period of time, there was no other answer but to bring in a couple of other manufacturers like Lockheed and Douglas to help out Boeing. I think the fact that both Lockheed and Douglas have done a good job and pretty well met their schedules is a good answer to whether it was a right decision.

It depends upon whether you look at the second source of production purely to get out airplanes or as a means of expanding the mobilization base. Each case must be looked at on its own merits.

Q. Would you care to comment on the Vance plan for stockpiling tools rather than aircraft?

A. I am not a production expert, and I don't know too much about the Vance plan for stockpiling tools, but it has always been our opinion in the Douglas Company that money is best spent where it produces the most aircraft. By the time all the components can be accelerated we can always catch up and build the airframes.

We don't feel that we are the bottleneck. It is our opinion that money should be spent as much as possible for hardware. This gives us the best mobilization base.

The Air Cargo Market

Q. When do you think the air carriers will start utilizing air cargo on a scale of a major business?

A. That's something that's growing all the time now although I do not expect to see any great change in air cargo until some new types of airplanes come out. A lot of us think it is growing much slower than it should; we would like to see a much faster growth. The problem, of course, is to get the ton-mile costs down to a point where you attract a much broader market. As the ton-mile costs move down the number of tons of cargo to be carried moves up at a very fast rate.

Q. Douglas has sold several DC-6A's; about how many?

A. About 25 DC-6A's and they are doing a very fine job. But the tremendous jumps in cargo business are going to come when we come out with new types of airplanes. They will considerably reduce the ton-mile costs so that the volume will be 10-20-100 times larger than it is today.

Q. Do you think these new type airplanes may be turboprops?

A. There is no doubt about it.

Q. If that's the case, would you say that eventually the bigger sales volume for the Douglas Aircraft Company in turbine-powered aircraft would be the turboprop?

A. That is possible, but it's a long time out in the future. But if turbopropeller airplanes come along with the low cost that they show theoretically, the cargo business could be as big or bigger than the passenger.

Q. Would development costs of the turboprop transport run on the same scale as the turbojet?

A. They might be slightly less than the jet, because they tend to involve a little lighter airplane than the jet, but we are still talking about big numbers.

Q. Do you think that Douglas might be able to convert the DC-6 line to turboprop power?

A. It's perfectly possible to convert DC-6 or -7 type airplanes to turboprops. Whether this is the right thing to do is something we have been thinking about for some time.

To get the most efficiency out of the turboprop you should fly it at considerably higher speeds than you fly the present transports. If this is necessary it means quite severe modifications in wing and tail and cockpit to allow the cruising mach number to increase considerably. It may well be better to make a complete new airframe.

Q. It's rather widely understood in the industry that Douglas is drawing some pictures of what might be the DC-9, a turboprop transport.

A. Well I think it is fair to say that Douglas is looking at a brand new turboprop; we would be rather foolish if we didn't compare that with conversions to see if it wasn't more efficient.

Q. Has Douglas given much serious or recent thought to producing a DC-3 replacement?

A. We have given lots of thought to that. We came out with a Super DC-3 which we thought was the right answer, and still do, for certain uses. So far only the military has bought the airplane in any quantity. We are still convinced that a lot of the small local operators cannot afford an airplane much bigger than the Super DC-3 since they not only have to look at seat-mile costs but must look at airplane-mile costs. Some of the routes, a lot of the feeder routes we think, just cannot afford an airplane more expensive than the Super, because of the low load factors they must operate at certain times.

Q. Do you think Douglas might be interested in building an airplane for the corporate aircraft market, an executive-type airplane, for example?

A. It is quite a considerable market, something like 1,000 airplanes or more in this field. It is very interesting and enticing in a way, but like the commercial business, you have to take a big, fat gamble.

Q. Do you think there might be a possibility of developing a jet-powered corporate airplane?

A. It is possible to develop a small jet airplane. Just how essential it is for a corporation to have a jet airplane again gets down to how much it costs to operate for the speed you get.

The problem is how to develop a small jet airplane with a lot of flexibility for short and long range and for small field take-offs.

Q. What's the outlook for the B-66 series aircraft?

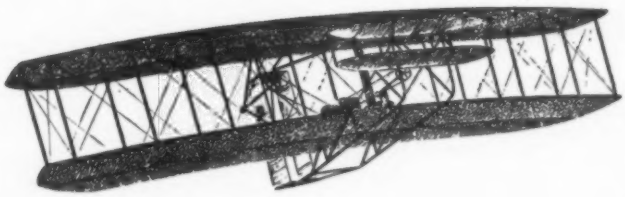
A. We have great expectations that it will be an extremely fine airplane and it should be with us for some time to come. It has very good performance, and very good load-carrying ability. It should come into great use in the Air Force.

Q. What's Douglas' attitude on the current note of urgency about the development of stripped-down fighters?

A. This discussion has gone on a long, long time. Just how far do you go? Do you make an airplane to carry everything that it might someday want to use or do you have it carry practically nothing?

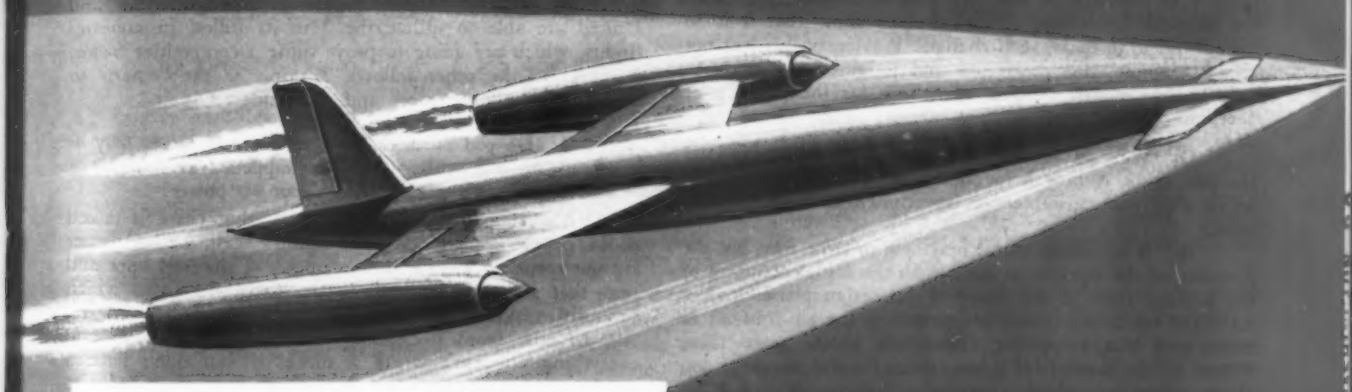
All designers must continually fight to keep the equipment and gadgetry to a minimum, but it has been proven by the Korean War and the North American F-86's that

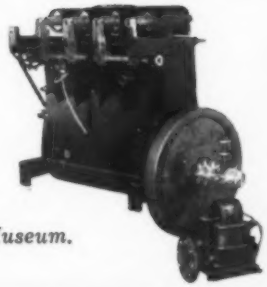
Wright Brothers *pioneers in piston power in 1903*



PROGRESS
50TH ANNIVERSARY OF POWERED FLIGHT
SECURITY

marquardt *pioneers in jet power in 1953*





The Institute of Aeronautical Sciences selected Marquardt engineers to produce the replica of the original Wright Brothers engine for permanent display at their Durand Aeronautical Museum.

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Complexity: 'Some gadgetry is pretty important'

some gadgetry is pretty important. It is just a question of the plane's mission; you must not forget the goal of the mission that you are required to do.

Q. What do you think of the recent weapons system concept?

A. It will put more responsibility on our shoulders. Commercially we are always doing a weapons systems concept—complete airplane with all equipment, and having full responsibility for the whole thing. From that standpoint, to have complete responsibility is not completely new, although to have complete responsibility in some of these fields like bombsights is somewhat new to us.

In some of our missile business we have been in the complete systems business for a long time. We can see some problems arising, but it is still very worth while.

Q. Do you think it might lead to more efficiency?

A. It is very possible that it can. It is like any change; you have to walk before you run, and it is going to take a great deal of effort on the part of both the manufacturers and the government to coordinate, to be sure that people are not going off too far in different directions.

This program should make it possible for the manufacturer to switch from one type unit to another type when the physical limitations of the airplane show that it is to his advantage to make such changes. Previously this was not always possible. But great care and judgment have got to be used not to just develop something for the pleasure of developing it.

Q. Well do you think it may expedite production? Do you think it may help eliminate some of these bottlenecks that you encounter in government-furnished equipment?

A. It is possible that it may help in some way, but the planning of the equipment starts with the initial planning of the airplane right in the flurry of the design phase. It does make the contractor jointly responsible to the government to make sure that everything comes out at the same time. Where in the case of GFE the contractor did not have too much control over whether everything was correctly timed, in this case the contractor will be acting for the government to help tie the whole thing together. This could help eliminate the bottlenecks.

Maintenance by Manufacturer

Q. What do you think of returning maintenance to the manufacturer?

A. We believe very strongly in this, because we believe that the manufacturer should know the most about his airplane. We are already running a maintenance base in Ontario for Navy R6D's, which are Navy versions of the DC-6A, and it is a very satisfactory system, we think.

We are running it very much like the airlines' system of progressive overhaul. It gives us the opportunity to incorporate modifications or modernization items along with the overhaul and it gives us the opportunity to keep tab on the utilization of parts so that we can suggest to the government the most economical and efficient stockpiling of spare parts.

Q. Do you think it would be practical to apply the same system to combat airplanes?

A. You can't make an unequivocal statement like that, because there are certain types of combat airplanes, forward based airplanes, on which certain levels of maintenance must be done in the field. Home based airplanes, heavy bombers, transports and things like that, look much more feasible as subjects for this progressive type maintenance.

Factory maintenance has to be based upon airplanes that return to this country with enough frequency to schedule them for overhaul. We actually get reports all of the time from the Navy on where all of the R6D's are, and how much their time is, so we can schedule them.

Q. Compared with most of the other airplanes which Douglas has produced commercially, sales of the DC-7's seem to have been slow. How do you account for that?

A. Well, we think it is a little early to say for sure that we are not going to sell a pretty good volume of 7's. We were in a little bit different circumstances than other competing companies as far as sales of transports, in that the DC-6B is still an up-to-date, modern airplane, and the 6B and the 7 both offer the same class of comfort. There is only the difference in performance there.

Many of the airlines that have DC-6B's so far have felt that the change to the 7 hasn't forced them yet to split their fleet. Obviously if you can keep a one-fleet airline, this is better. Bigger operators like American and United are able to utilize the 7 to its fullest in non-stop flights, which are going to prove quite a competitive factor, I think, to the other fellows. I think as the 7 starts to operate you will see more and more interest in it.

Q. Do you think that the armistice in Korea may be a prelude to a repetition of what happened at the end of World War II in the reduction of our air power?

A. At any time, unfortunately, that peace is talked about, people immediately start saying "Well, we had better cut out spending money for armament." I sincerely hope and pray that we don't go back to the tremendous cuts which seriously weakened our national security in '46, '47, and '48. All the talk about stockpiling and mobilization bases and everything else isn't worth a nickel if you don't have a strong aviation industry and supporting industries, and also if you are not developing new types of aircraft.

It is absolutely essential to keep on developing new types of aircraft if we are going to maintain any semblance of a position with Russia. It is very doubtful that we will always be willing to pay the price necessary to outproduce them. In fact it is very probable that we won't spend the money to outproduce them, just to maintain some reasonable level. But if we go back to the days of '46, '47, and '48, where there was practically no military aircraft production, it certainly looks to me as if we are inviting the Russians to attack us.

If we have learned anything out of Korea, we learned that one terrible lesson: that the Russians have done a very capable job of developing airplanes, a tremendous job that is beyond our understanding: the job of getting people like the Chinese to operate and maintain airplanes and radar antiaircraft batteries, and everything else. These are things that everybody said they would never be able to do. If we are not careful we will react as we did before Pearl Harbor, saying: "Well the Japanese, they couldn't operate an army and a navy and an air force." The Korean War, if it has proven anything, has proven that we have continually underestimated our enemies.

• • •

GERMAN-DESIGNED TURBOPROPS power the Red Air Force's six-engine "America" bomber—the TuG-75. Both aircraft and engine are produced in Russia's Far East. Deliveries are being delayed by difficulties with the production of the engine and fewer than 20 of the planes have been turned over to the Soviet Strategic Air Command.

Turboprops Power Long Range Red Bombers

Powerplant fitted to stretched-out Tupolev Tu-4, now designated Type 31; "America" also uses PTL-022.

By ANTHONY VANDYK

SOVIET RUSSIA has adopted the turboprop as the powerplant for aircraft in its long range bomber force. This significant news, coming from reliable intelligence sources, supplies the answers to several hitherto unsolved problems concerning the Red Air Force's fast-expanding Strategic Air Command (AMERICAN AVIATION, August 3) and notably explains why Russia is still building at the rate of some 60 a month what was thought to be an obsolescent four-engine bomber—the Tupolev Tu-4.

It has now been learned that the Tu-4 airframe has been "stretched" and modified for turboprop power but that the changes are such that most of the jigs and tools used to build the original aircraft can serve for the production of the new model, which has a span of 184 feet and a length of 145 feet. This four-engine turboprop bomber is designated Type 31, which was formerly thought to be the alternative designation for the six-engine TuG-75 "America bomber," likewise powered by propeller-turbines. Both models use the same turboprop—the PTL-022.

In the past there has been much confusion regarding the TuG-75's powerplant—some reports said it was turbojets, others asserted that it was turboprops. In fact both were correct. Russian plans called for two versions of the six-engine bomber: one powered by Lulkov Lu-4 turbojets and the other equipped with PTL-022 turboprops. The pure jet version was abandoned because of the Lu-4's high fuel consumption, which gave the aircraft a range of only about 4000 miles, completely inadequate for its mission as the Soviet "America" bomber.

Rejection of the Lu-4 should not be taken as a reflection on the engine, since it was primarily designed as a fighter powerplant, where high power is more important than low fuel consumption. Little information is available on the Lu-4 other than the following data: static thrust rating (design), 11,500 pounds; weight, 6400 pounds; length, 20 feet 5 inches; overall diameter, 5 feet 4 inches.

Most of the testing of the turboprop-powered TuG-75 has taken place at Kuibyshev, which is one of the development centers for the PTL-022 engine. Production of the bomber and its powerplant is concentrated in Russia's Far East. The airframes are manufactured at Komsomolsk and Kharbarovsk, whereas the latter city is the production center for the PTL-022.

Production of the engine started in

BASICALLY an enlarged Tu-4 redesigned for turboprop power, the Type 31 is Russia's latest four-engine bomber. Red Air Force Type 31 units are based at northerly fields convenient as starting points for attacks on North America.

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June, 1952, but has encountered various difficulties with the result that deliveries of TuG-75's are being delayed for lack of powerplants.

As of April 30, 1953, only 17 TuG-75's had flown and of these three were still undergoing their factory test program. The 14 aircraft that were in the hands of the Red Air Forces' Strategic Air Command were undergoing shakedown tests (flying between Northern Siberia and the Kamchatka peninsula) and were in no condition to be used operationally at that time.

The TuG-75's powerplant, the PTL-022, is basically a German engine designed by the Junkers company to a Luftwaffe specification for a turboprop to power a four-engine bomber. Even by today's standards the German specification was ambitious: 6000 ehp; 13 ounces per hp per hour fuel consumption; 6000 pounds dry weight; 43 in. diameter. Equipped with an axial compressor and a three-stage turbine, it was designed to drive two coaxial contra-rotating propellers.

After two years of experimentation the Russians decided at the end of 1948 that a target performance of 5000 ehp with a fuel consumption of not over 11.30 ounces per hp per hour would be adequate for a pre-production engine. Twenty of these were ordered and they started bench tests in the summer of 1950, including several 100-hour runs followed by official 80-hour type tests.

During the course of its development in Russia the PTL-022 underwent several modifications. Some of these were due to the employment by the Russians of engineers from another German jet engine manufacturer, BMW, as well as from Junkers. One result of the BMW influence was the modification of the combustion chambers so as to use the BMW annular system in conjunction with the original Junkers interconnected individual chambers. Various modifications to the PTL-022 resulted in fuel consumption being cut to under 11 ounces per hp per hour by the beginning of 1951 and subsequently to under 10 ounces.

This low fuel consumption has not been achieved in present production engines, however, although these develop more power (5500 ehp) than the earlier models. One report states that the production PTL-022 consumes about 750 gallons of Russian kerosene per hour (taking a specific gravity of 0.83 for Russian kerosene, this is equivalent to over 17 ounces per hp per hour) in full-power bench tests; in the air this figure would, of course, be much lower.

The following basic data refer to

the production PTL-022: 14-stage axial flow compressor; three-stage turbine driving a single propeller or two coaxial contrarotating propellers (57% power is absorbed by the front propeller and 43% by the back one); modified Barmag gear-type fuel pumps; fuel injection nozzles similar to those used on the Roll-Royce Nene. Characteristics and performance: air mass flow, 62 to 68 pounds per second; turbine speed, 7500 rpm; compression ratio, 1:4.7; dry weight, about 4700 pounds; diameter, 43 in.

The first bomber to be fitted with the PTL-022 was the Type 31. Originally contrarotating propellers were used, but now the engine drives a single propeller. For the initial flight testing of the Type 31 piston engines were used. These gave the aircraft a top speed of 450 mph and a range of 6500 miles. Use of turboprop power has boosted the Type 31's speed, but has slightly reduced the range. The Type 31's somewhat marginal range for operation against the United States may be one reason why the aircraft are based at the most convenient jumping-off points for attacking North America. Type 31 bases are located near Archangel and Anderma in the Arctic; at Norilsk in northeast Siberia; and in the Anadyr and Kamchatka areas.

Starting a propeller-turbine in such northern climes, particularly in winter, is difficult, and for this reason a specially designed starter designated TS-1 is used. Operating on a mixture of kerosene (95%) and oil (5%) the starter is actually a small gas turbine which runs for 90 seconds, sufficient time to bring the turboprop to an idling speed of 2500 rpm.

During tests in the summer of 1950 500 consecutive starts were achieved, but subsequently the Russian authorities required that this number be increased to 2000. The TS-1 runs at 10,000 rpm, is 23″ long and has a diameter of 12″.

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86 Super Connies on Mid-Year Backlog

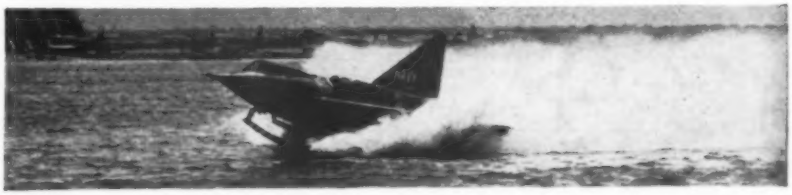
Averaging one sale every 10 days during the first half of the year, Lockheed Aircraft Corp. reached the mid-year mark with orders for 86 Wright Turbo-Compound-powered Super Constellations. Leonard K. Schwartz, Lockheed's director of commercial sales, termed the backlog, nearly $150 million, a new record for any "advanced type transport including British jets."

Five airlines ordered 21 additional Constellations during the first six months of 1953. This was supplemented by later orders for eight more by TWA and an unspecified number by Germany's Lufthansa airline.

CONVAIR's Sea-Dart, XF2Y-1, rises on its hydro-skis for take-off.

Convair Unveils the Sea-Dart

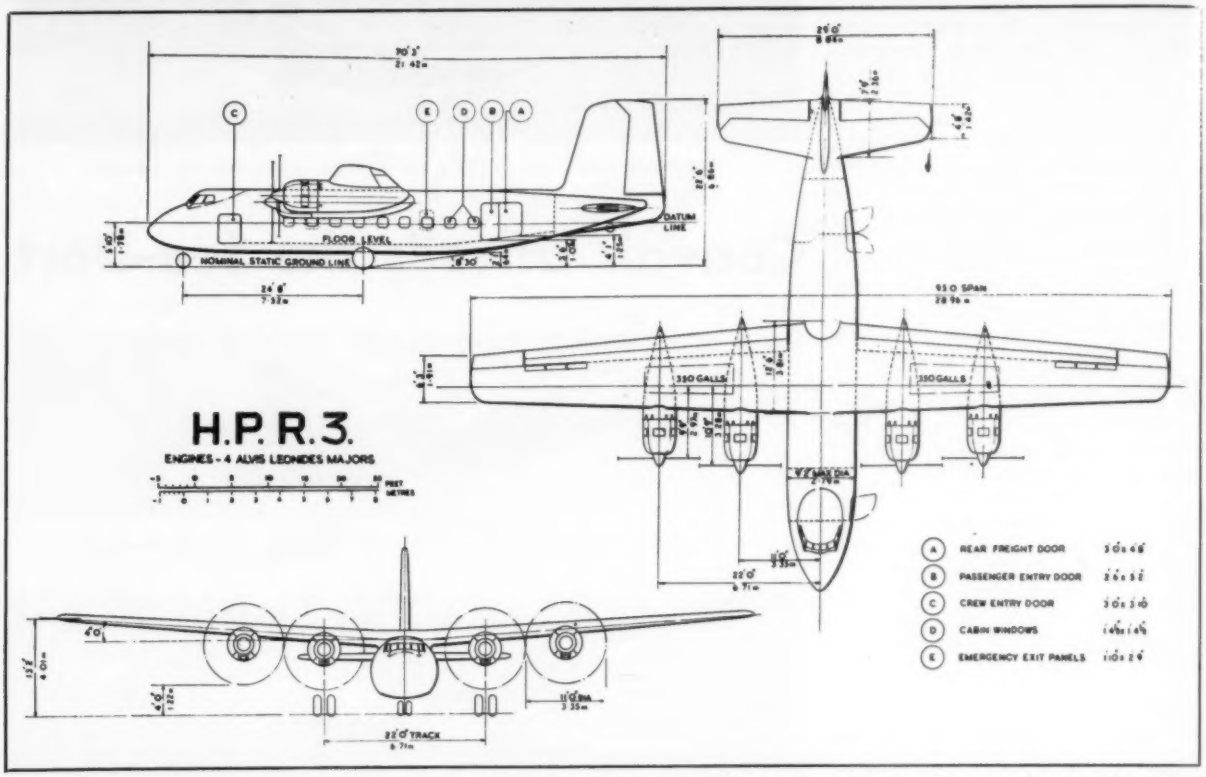
RETRACTED, the Sea-Dart's hydro-skis disappear into the fuselage.



SPRAY stays well clear of the jet engine intakes as the XF2Y-1 touches down.

NO BEACHING GEAR is needed as the Sea-Dart comes out of San Diego Bay under its own power. Note small wheel visible at end of hydro-ski.

POST-FLIGHT MEETING brings together test pilot E. D. (Sam) Shannon (center), project engineer F. H. Sharp (left), and his assistant, Dwight Bennett.



HANDLEY PAGE HPR.3 will be powered by a new British engine now under development—the twin-row Alvis Leonides Major. Design was finalized after a company executive held on-the-spot conferences with DC-3 operators all over the world.

Two New Feeder Aircraft Designs Revealed

Handley-Page HPR.3 derived from Marathon; Accountant uses "petal" assembly system.

WITH INTEREST among U. S. manufacturers in developing new aircraft as DC-3 replacements apparently dead, increasing numbers of British companies are working up feeder line designs. The British industry now has only two serious rivals—France (with the Hurel Dubois HD 32) and the Netherlands (with the Fokker F.27)—since it now seems that Canadair has shelved its CL-21 project.

British firms interested in the DC-3 replacement market include: English Electric with a large aircraft powered by two 3000-ehp Napier Eland turboprops; Scottish Aviation with the 16-passenger Twin Pioneer; Percival Aircraft with a stretched-fuselage version of its high-wing Prince; Handley Page with the HPR.3 version of the Marathon; and Aviation Traders (Engineering) Ltd. with the turboprop-powered Accountant, briefly described in AMERICAN AVIATION of August 3; and de Havilland with the Heron.

None of these aircraft, except the Heron which is now in production and in world wide service, has reached the prototype stage. Several of them are still on their sponsors' "secret list."

This survey will concentrate on two of the designs—the HPR.3 and the Accountant.

On-the-spot discussions by a high company executive with almost every foreign operator of DC-3 equipment have resulted in the four-engine Handley Page HPR.3 being designed to meet users' requirements as well as to utilize as much as possible of the production facilities set up at Reading (the former Miles Aircraft plant) for the Marathon. The HPR.3 thus bears a distinct resemblance to the Marathon but uses a more powerful engine (the 870-hp Alvis Leonides Major, still in the development stage) and has a single fin and rudder (instead of three). The following is a performance summary:

Cruising speed: 220 mph for 1500 miles at 50% METO power.
Operating costs: 1.5c per passenger-unit-mile or 17.5c per ton-mile.
Payload for 1500 miles at 10,000 feet: 7050 lbs.
Payload with full tanks 838 gallons at 10,000 and 20,000 feet: 6980 lbs.
Max. gross weight: 33,500 lbs.
Range (838 gals.) at 50% METO, 10,000 feet: 1540 miles.
Range (838 gals.) at 50% METO, 20,000 feet: 1010 miles.
Range (838 gals.), 10,000 feet, maximum weak mixture: 1080 miles.
Range (838 gals.) 20,000 feet, maximum weak mixture: 1510 miles.
Ultimate range 10,000 feet 50% METO: 1610 miles.
Ultimate range, 10,000 feet maximum weak mixture: 1088 miles.
Ultimate range 20,000 feet, 50% METO: 1705 miles.
Ultimate range 20,000 feet, maximum weak mixture: 1580 miles.

Handley Page suggests alternative models for 32 or 36 passengers, plus freight, or an all-freight version. It is understood that a version with 44 seats could be available if very high density accommodations were described. Price of the HPR.3 is believed to be about $250,000.

Unlike the HPR.3, the Accountant is a completely new design and, as its name implies, features economy plus construction simplicity. Powered by two Dart or Mamba turboprops it would carry a payload of 9000 pounds (22-33 passengers) and gross 21,000 pounds.

Maximum speed would be 295 mph and the maximum stage length would be 920 statute miles.

Take-off distance to clear a 50-foot obstacle would be 2130 feet, whereas landing distance over a similar obstacle would be 1890 feet. Minimum operating costs would be (approximately): one cent per seat-mile; 28¢ per aircraft-mile; and $74.20 per flying hour. These cost figures are based on an annual utilization of 2,000 hours with a stage length of 920 statute miles and cruising at 288 mph at 30,000 feet.

The fuselage of the Accountant is designed as a perfectly symmetrical streamlined shape. Although generally considered expensive to build, Aviation Traders believes that the use of the "petal" system for this shape will simplify construction. Instead of using costly stretcher presses to induce double curvature in skin sheets, the skins, which run almost the entire length of the aircraft, are cut to their final shape in the flat, and the double curvature is induced during actual assembly.

As the fuselage is of symmetrical shape, each skin section is identical in shape. A large number of skins (or "petals") can therefore be cut out and drilled one on top of the other so that they radiate around the jig like petals around a flower. The tips of the "petals" are then closed in manually to complete the cigar-shaped fuselage.

The metal skin is therefore stretched to its final shape without wrinkling and, when all the adjoining skins have been riveted to each other, a very strong, light structure results. After the fuselage has been completed, the windows, doors and apertures for wing attachments are cut out of the metal skin.

This simple construction method facilitates subcontracting of the work. Skin manufacture, for instance, could be performed entirely by subcontractors without impairing efficiency on the production line. In view of the limited facilities at Aviation Traders' Stansted plant the company would in fact subcontract most of its production work.

Interesting features of the Accountant design include: complete nose (including crew compartment) is designed to swing on hinges to one side to facilitate loading freight into the 1250-cubic-foot cabin (there is no indication how control and instrument lines will be adapted to enable the nose to pivot); landing gear fairing doors with their complicated linkages and hinges have been eliminated; and the short landing gear units are linked to a common operating jack for retraction and lowering.

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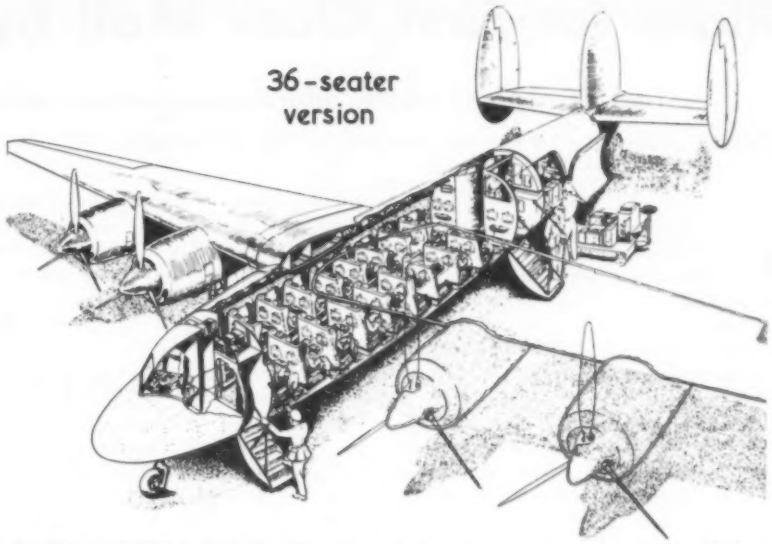
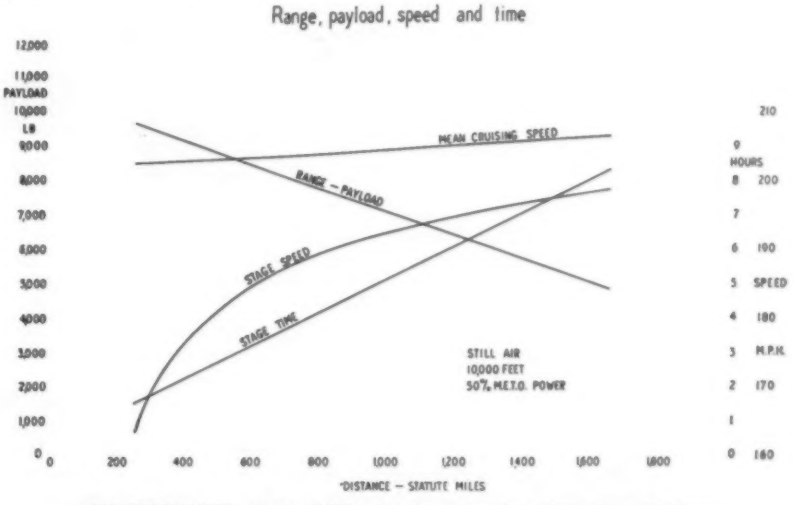


EARLY DESIGN for the Handley Page HPR.3 featured use of a triple tail (as in the Marathon from which it is derived) but the latest version has a single unit.



PERFORMANCE of the HPR.3 is shown on this chart. Use of four 870-hp engines gives a particularly good three-engine performance.

PROTOTYPE of the Aviation Traders (Engineering) Accountant is under construction. The turboprop-powered aircraft features constructional simplicity and economy.

Plans for First Class Mail by Air Pushed

Lack of cost and volume information hampers early airline attempts to set up proposals for PO study.

By Eric Bramley

FUTURE of the Post Office plan to conduct experiments in the carriage of first-class mail by air hinges on the outcome of extensive cost and volume studies which, at press-time, the PO hoped to complete "within a matter of days."

Three airlines so far have told the PO how much they want to be paid for hauling the first-class mail. The legality of the experiments has still to be finally cleared with the Comptroller General of the U.S.

Postmaster General Arthur Summerfield probably gave the plan its biggest push when he talked to the presidents of the airlines at an Air Transport Association meeting in June. Following the meeting, the presidents directed that industry conferences be held to see if proposed rates could be worked out for presentation to the PO.

Following this, Summerfield was quoted in a Chicago interview as stating that first-class mail experiments would start between New York and Chicago within 60 days.

The airlines have yet to agree on what they will propose to the PO in the way of rates. The result has been that three carriers filed their own proposals. There are those in the industry who are bitter about the failure of the joint rate meetings. They blame the PO for not furnishing them with certain information needed in the conferences—primarily, what routes would be used in the experiments, what volume of mail might be expected, and what priority it was to have. "We were working in a vacuum," one official said.

Although miffed over the lack of information, most airlines look with favor on the new thinking that came into the PO with Summerfield and John Allen, Assistant Postmaster General-Transportation.

The only adverse comment has been that the moves have been made too fast. There's reason to believe that the PO is now working to get some volume figures on first-class mail, and will name the routes (most frequently mentioned possibilities: New York-Chicago, Washington-Chicago, New York-Miami).

First-class mail by air could mean considerable additional revenue for the carriers. Chances are that a widespread system would double their mail loads, and that most of it could be handled in present combination airplanes and freighters. It might, however, decrease the PO's revenue from air mail stamps—the public would be inclined to switch from 6¢ to 3¢ postage, figuring its letters would fly anyway.

Here are the rate proposals submitted to the PO so far:

• **American Airlines**—25¢ a ton-mile New York-Los Angeles on a one-year test basis. This would be for tonnage "in addition to that now being transported." In other words, if AA's air mail volume fell off, it would expect to receive 45¢ a ton-mile (present mail pay rate) for enough first-class mail to keep the New York-Los Angeles tonnage figure up to where it is now. AA would also carry first-class mail to intermediate points at a somewhat higher rate. This mail would be given a priority higher than freight but lower than express.

Sliding Scale

• **Capital Airlines**—A sliding rate scale based on a hauling charge and a "terminal factor" (a charge per hundredweight for loading, unloading, and handling mail at terminals). For New York-Chicago the rate would be between 30¢ and 32¢ per ton-mile, and would be comparable with American's for longer distances. The rate decreases as distance increases because there is more mileage over which to spread the terminal factor.

• **National Airlines**—Offered to carry first-class mail under its existing air freight tariff. Last year, NAL said, "volume freight" yielded an average of 18¢ per ton-mile. While short-haul mail would take high rates under this proposal, National feels the "incentive" would be to ship "volume" for "distances." Primarily, NAL's proposal would apply in the New York-Miami market.

The local service airlines are expected to submit their own proposal shortly.

Whether further attempts will be made to reach agreement on an industry rate remains to be seen. At the present time, no further conferences are scheduled. The next move is probably up to the PO—volume figures, routes, etc.

Tied into this mail picture—although not immediately—is an "expedited" mail plan currently being worked on at the Air Transport Association. It is reported to be a proposal for increasing the non-local first-class postage rate from three cents to five cents, and sending all mail over a certain distance (probably 400 to 500 miles) by air. It is somewhat similar to the present Canadian system.

This plan, if agreed to by all the airlines, would require legislation. Had Congress at this session increased first-class postage from three cents to four cents and air mail from six cents to seven cents, an expedited mail proposal would probably have been dead for some time to come. Legislators would have been unwilling to make another change soon.

Now, however, with rate increases postponed until next session, there's a chance that expedited mail legislation may be introduced. Off-the-cuff estimates are that such a system could mean 110 million ton-miles of mail for the airlines on top of the 70 million they carried last year.

As stated, however, expedited mail is not in the picture for the immediate future. Experiments with first-class mail are—when the details are worked out.

• • •

Two New Helicopters Due for Production

Production activity on two new model helicopters, the S-56 and S-58, has been revealed by United Aircraft Corp. in a letter to stockholders. Production plans for the S-56, the first twin-engine helicopter to be ordered into production in the U. S., are such that the Sikorsky Aircraft Division of UAC is planning a new 700,000-square-foot production facility at Stratford, Conn., to handle this work. Orders for the S-58, a larger single-engine version of the widely used S-55, for late 1954 production, were termed "substantial."

The disclosures came with the company's six-month financial statement, which showed net earings to June 30 of $12,330,314, or $3.66 per share. This compares with earnings of $8,600,319, or $2.49 per share, in the first half of 1952. Value of shipments during the comparable periods rose from $323,691,593 last year to $408,574,280 this year. UAC's backlog dropped from $1.64 billion three months ago to $1.6 billion as of June 30.

Stockholders were also informed that the Pratt & Whitney J57, in production since February, will soon be supplemented by a production model J57 with afterburners, a developmental model of which is now used in the North American F-100.

TARGET SELECTION

Hitting the selected target has been a prime problem since man first armed himself. However, unlike the problem which faced the primitive native with his bow and arrow, selecting targets for guided missiles involves many new techniques.

Fairchild's Guided Missiles Division was among the first in this country to undertake the design and development of complete missile guidance systems. The systems have been proven in test missiles flown by all three branches of the Armed Services and are among the most advanced types.

Research in the Fairchild Guided Missiles laboratories includes all the basic guidance systems such as surface-to-air, air-to-air and air-to-surface missiles. The division has developed an engineering and production team experienced not only with guidance systems but also with the aerodynamic, structural and propulsion problems associated with missiles.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

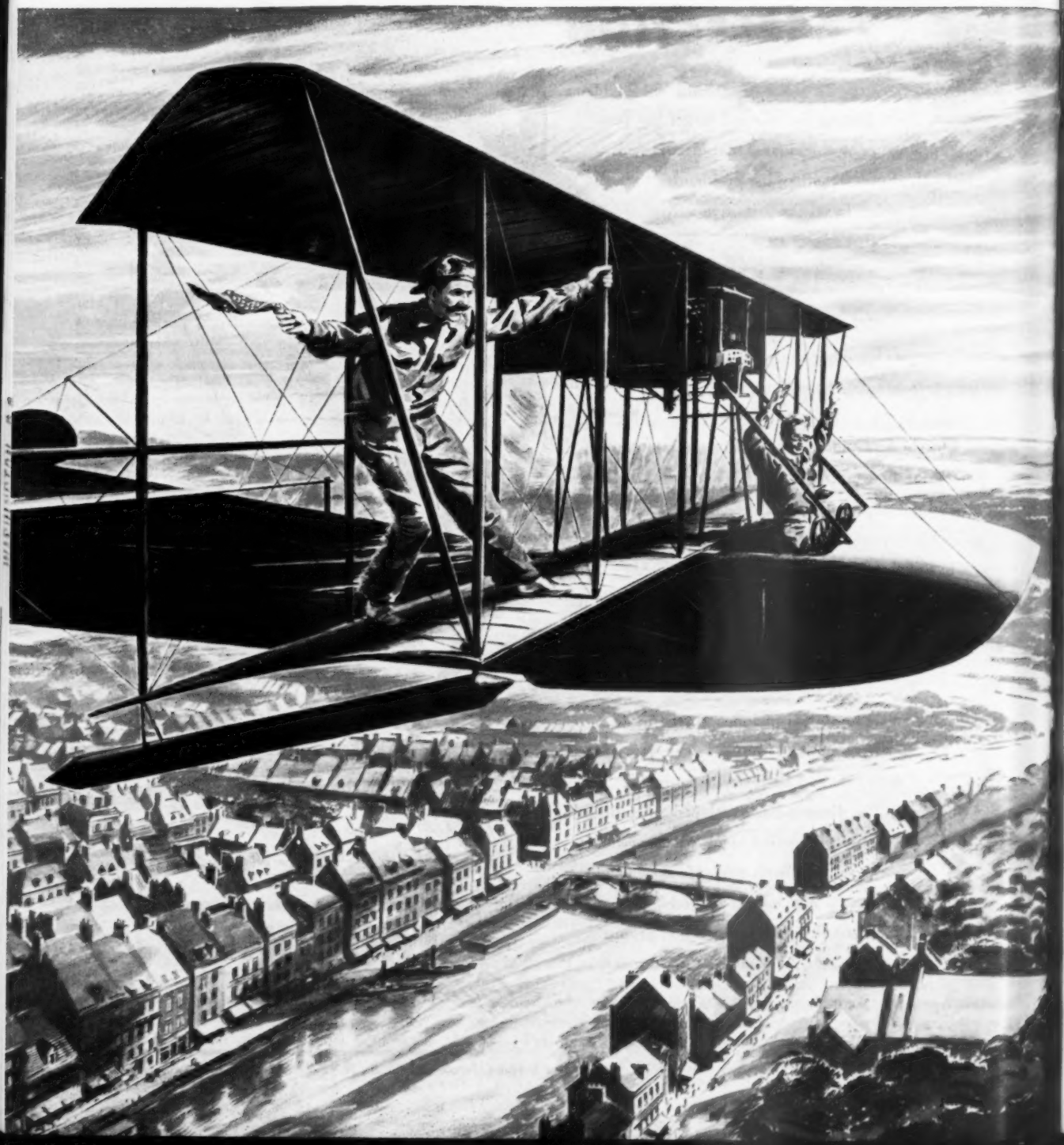
Guided Missiles Division

WYANDANCH, L. I., N. Y.

Engine Division, Farmingdale, L. I., N. Y. • Aircraft Division, Hagerstown, Md.

AUTOMATIC

1912 Lawrence Sperry, at 19, flew automatically with the first Sperry Stabilizer at Hammondsport, New York. Later, in a Curtiss flying boat, he competed in 1914 with 80 entrants for an award offered by the French for the first "stable airplane." Sperry won—in a dramatic demonstration in which the little plane flew by itself while Sperry held his hands above his head and his mechanic walked on the wing.



FLIGHT... another Sperry first... 1912

From the day in June, 1914, when Lawrence Sperry won the French War Department's 50,000 franc prize for the first "stable airplane," Sperry has taken the lead in making flying more and more automatic . . . as flying itself has required more and more precision. From the first simple stabilizers have come development after development, such as the Sperry Automatic Pilot and Automatic Approach Control to guide planes to better landings under all weather conditions.

TODAY, AS ALWAYS, SPERRY LEADS THE WAY

In production today at Sperry are instruments that give man even greater mastery of the elements. And the military demand is so great that hundreds of subcontractors are now sharing with Sperry the task of meeting these requirements.

1933 Wiley Post in the Winnie Mae made first solo, round-the-world flight. Using the Sperry Automatic Pilot, Post startled the world by stating that during flight he was able to take naps while the plane, under automatic control, flew itself. Post explained that a wrench tied to his fingers slipped from his hand to awaken him if he fell sound asleep, so he could check his course and make course changes if necessary.

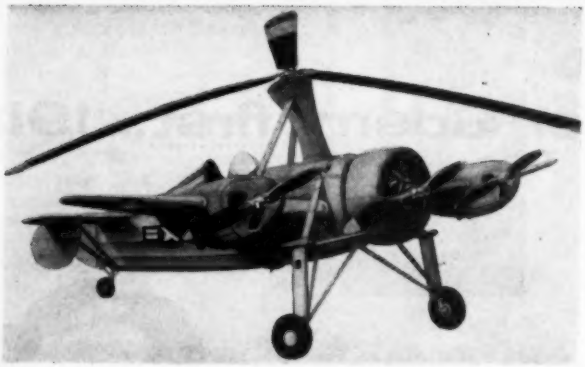
1946 United Air Lines installed Sperry A-12 Gyropilot on four-engine fleet to insure precise automatic instrument approaches to airport runway. UAL President, W. A. Patterson, considered installation . . . "a definite start in eliminating weather as an obstacle to airline operations."

1953 USAF's Boeing B-47B is equipped with Sperry Gyropilot, combining the latest in gyroscopic, servo, and signal system techniques. This automatic flight control system meets strategic requirements for high-altitude, long-range missions and automatic precision bombing runs.

19?? Automatic flight of tomorrow? Sperry laboratories are now busy solving automatic control problems for jets and missiles of the future. When they fly, precision automatic devices being developed by Sperry today will control them.

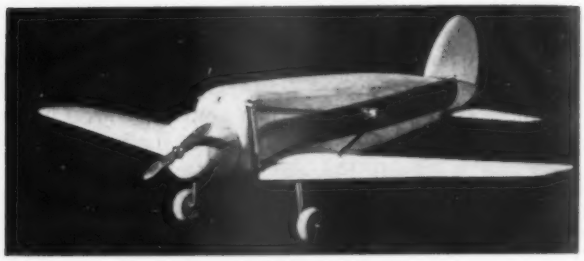
SPERRY GYROSCOPE COMPANY
DIVISION OF THE SPERRY CORPORATION
GREAT NECK, NEW YORK

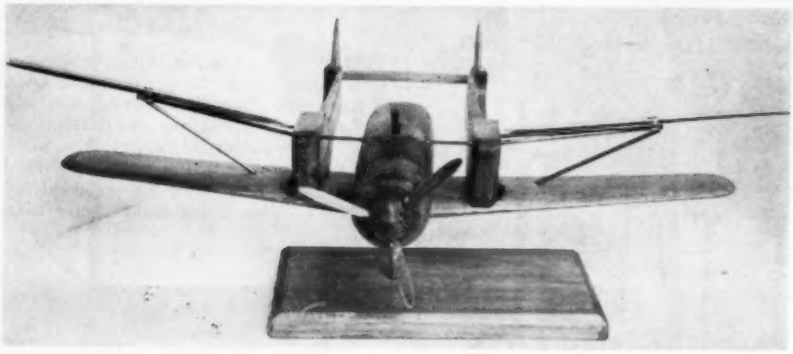
One of a Series of Advertisements Commemorating the 50th Anniversary of Powered Flight.



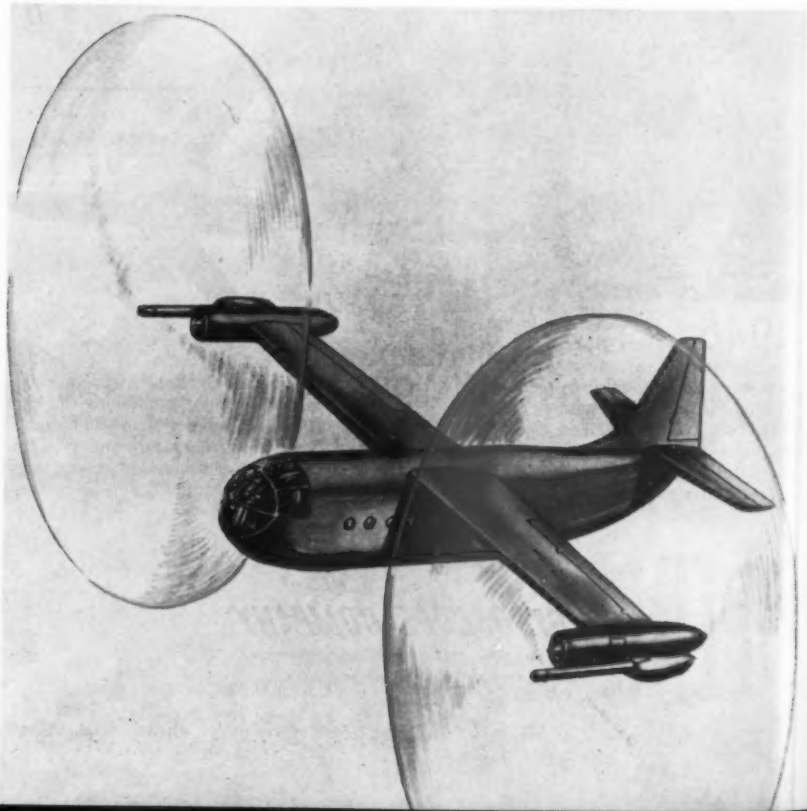
The autogiro comes back. Flight tests on a partially loaded rotor system will be conducted by the Navy on a Kellett Aircraft Corp. (Camden, N. J.) KD-1B autogiro, equipped with two Lycoming 140-hp engines in addition to the Jacobs 275-hp radial normally mounted in its nose. The Kellett autogiro was used by Eastern Air Lines to pick up and deliver mail between Philadelphia's post office and the Camden, N. J., airport during parts of 1939 and 1940.

Rotary Wing Design Scrapbook

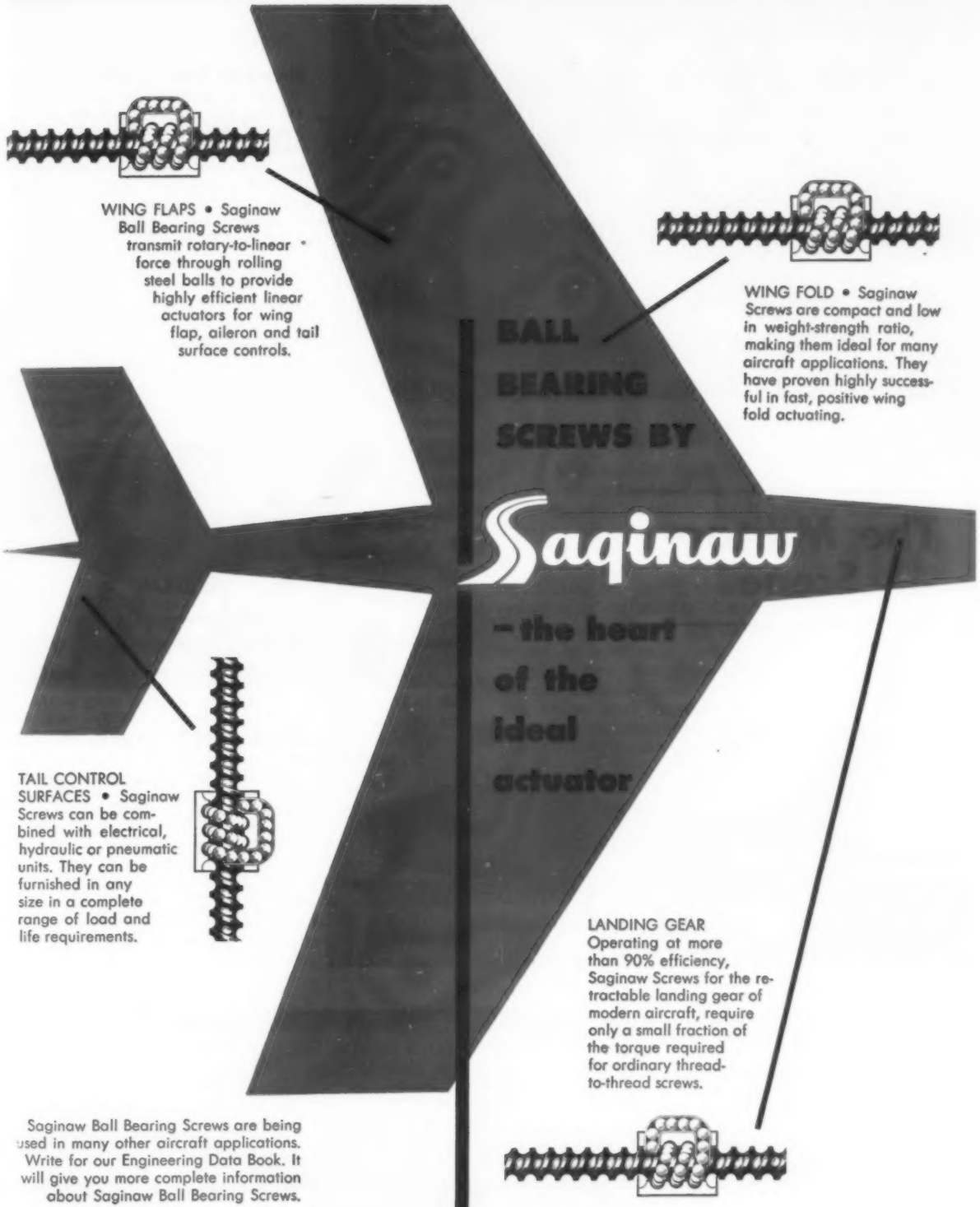




Medvedeff Monocopter. Novel design shown in two different versions above and at left involves use of twin rotors which lift the Monocopter vertically into the air; it then flies forward for a quarter of a mile, with the rotors gradually transferring load to the wing. At this point the rotors are folded in against the fuselage, as shown by model pictured above.



One design for convertiplane is built around giant rotors attached to drive shafts jutting out from the wing tips; in sketch at right turboprop engines are shown next to drive shafts. When the aircraft descends or rises, the shafts and rotors pivot about the base of the shafts within the wing tips, swinging through 90° arcs. Sketch from Bell Aircraft.



WING FLAPS • Saginaw Ball Bearing Screws transmit rotary-to-linear force through rolling steel balls to provide highly efficient linear actuators for wing flap, aileron and tail surface controls.

WING FOLD • Saginaw Screws are compact and low in weight-strength ratio, making them ideal for many aircraft applications. They have proven highly successful in fast, positive wing fold actuating.

BALL BEARING SCREWS BY Saginaw – the heart of the ideal actuator

TAIL CONTROL SURFACES • Saginaw Screws can be combined with electrical, hydraulic or pneumatic units. They can be furnished in any size in a complete range of load and life requirements.

LANDING GEAR Operating at more than 90% efficiency, Saginaw Screws for the retractable landing gear of modern aircraft, require only a small fraction of the torque required for ordinary thread-to-thread screws.

Saginaw Ball Bearing Screws are being used in many other aircraft applications. Write for our Engineering Data Book. It will give you more complete information about Saginaw Ball Bearing Screws.

Saginaw STEERING GEAR DIVISION

GENERAL MOTORS CORPORATION,

SAGINAW, MICHIGAN

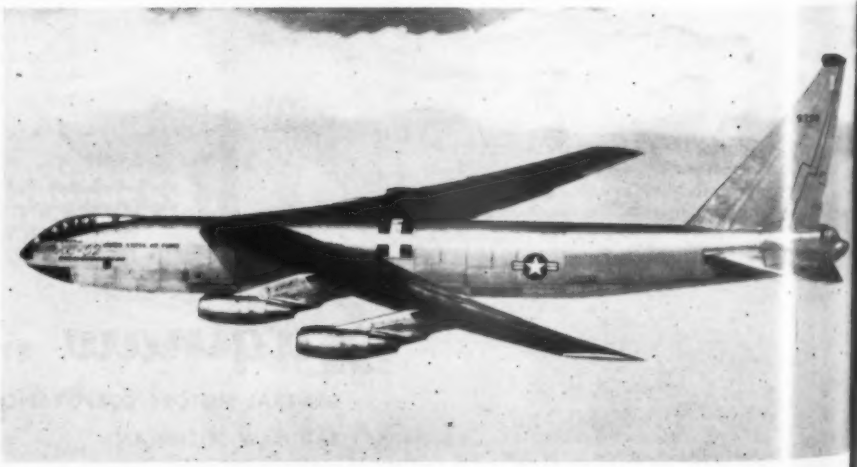
MANUFACTURERS OF SAGINAW POWER STEERING

Hawker Sea Hawk carrier fighters of the Royal Navy in close formation. Sea Hawks are being produced in Britain under a USAF "off-shore" contract. Armed with four 20 mm. cannon in the nose, the Sea Hawks are powered by 5000-pound-thrust Rolls-Royce Nenes.

The Military Scene

High-speed target, Ryan's XM-21, has been ordered by Army Ordnance, with deliveries scheduled to begin later this year. Twelve feet wide and 18 feet long, the target weighs about 1800 pounds, flies almost at the speed of sound, and is recovered by parachute.

New Fury. Prototype of the Navy's faster, heavier, bigger North American FJ-3 has completed its first flights. Powered by the Wright J65 Sapphire, the FJ-3 is rated in the high subsonic speed range. It is now in preliminary stages of production.



Movie star. Cameras mounted on top of the tail of this Boeing XB-52 Stratofortress photograph small tape streamers glued to the left wing during test flight.

The Two-Pronged Drive

NOW that the Joint Chiefs of Staff are in full stride, with recent swearing-in ceremonies complete, important decisions on U. S. defense (and offense) will be forthcoming, at least before the year is up. Future of this country's air power rests heavily, but not completely, on the forthcoming recommendations of Adm. Arthur W. Radford (JCS chairman) & Co., who are concentrating on what "hardware" will be needed.

They have some 700 major items to mull over almost immediately, including aircraft. This figure constitutes 75% of the hardgoods needed to keep the services functioning at the desired level of combat capability. They are in the midst of an overall study of the situation. When their recommendations are submitted to the Office of the Secretary of Defense, possibly not before December, some new approaches to Pentagon problems will be advanced.

With the Joint Chiefs and assistant defense secretaries in action, a "two-pronged" attack on major military problems is now in effect. A particular area due for a thorough going-over is research and development. Recent appointment of Donald A. Quarles as assistant defense secretary (research and development) started the word going around that centralization is in the wind for R&D among the services, with OSD likely to have a great deal more say-so in what weapons of the future will be tried. This two-way approach to the R&D picture should eliminate some duplication, Pentagon authorities have indicated. The "two prongs" will delve into other matters similarly.

Current cutbacks and economy moves, which some say have interrupted or weakened U. S. combat potential (Defense Department officials don't agree), may not be so readily acceptable to the Joint Chiefs, at least without "discussion." Admiral Radford's statement some time back that "there is no short cut, no cheap, no easy way to win a war" certainly indicates his feeling for the necessity of expenditures. Just how far he would go in this respect remains to be seen.

Probe & Drogue in Vogue

A large Air Force contract appears in the making for increased use of the in-flight refueling probe-and-drogue system. The AF has reportedly earmarked $34 million to convert tankers that are now using the flying boom technique, into the probe-drogue method because of (1) flexibility, (2) quicker contact, (3) elimination of an operator, (4) simplification of equipment, and (5) less flying precision required.

In probe-drogue refueling, the plane being gased up maneuvers a probe extending from the wing into a large funnel or "drogue" at the end of a hose nearly 100 feet long attached to the tanker. The flying boom system uses a 45-foot telescopic boom as a link. When the aircraft are in tight formation, it is positioned and controlled by a flying boom operator.

Flying booms have been the AF in-flight refueling vogue for some time, but with the advanced "state of the art" AF officials are beginning to show probe-drogue preference.

Charles W. Newhall, president of Flight Refueling, Inc., Danbury, Conn., has said his firm might be in line for a "large contract" for probe-drogue refueling equipment, possibly within the next 60 days, and he noted the increased AF attention the technique has been receiving of late.

Letters of Intent

A change for the better in Air Force procurement methods has been noted. The AF, along with the other services, has made notable headway in reducing delays in converting letter contracts into formal (definitive) contracts. Such negotiation lags have caused numerous contractural headaches to industry and the AF. During the past 25 months there has been an 80% reduction in the number of such contracts.

Letter contracts are four-page legal agreements, termed by some as a "necessary evil" when not converted in time, that get projects under way in days, whereas definitive contracts require months of negotiation before work begins. Their value is expediency, which can be extremely important in getting a vital project rolling quickly. They are written with the understanding that they are to be converted into definitive contracts at the earliest possible time.

As of July 31, there were 200 AF letter contracts in effect, with a total definitive value of $3,604,000,000. Over 1000 were in industry's hands on June 30, 1951, representing a definitive value of about $7,500,000,000. A peak definitive value in issued letter contracts was reached on January 1, 1952, when 810 letters totalled about $11,000,000,000. Necessity of "quick starts" on defense projects at the outset of the Korean War brought about the high figures.

The decrease is attributed not only to the more settled-down approach to contractural procedures as Korean fighting continued but also to an intensive drive by AF procurement officials to speed up conversion. Numerous problems arise when letter contracts aren't converted in "reasonable" time, at least within a year. Many had been running from two to three years, even though most stipulate a period not to exceed 90 days (a period which may be extended as required).

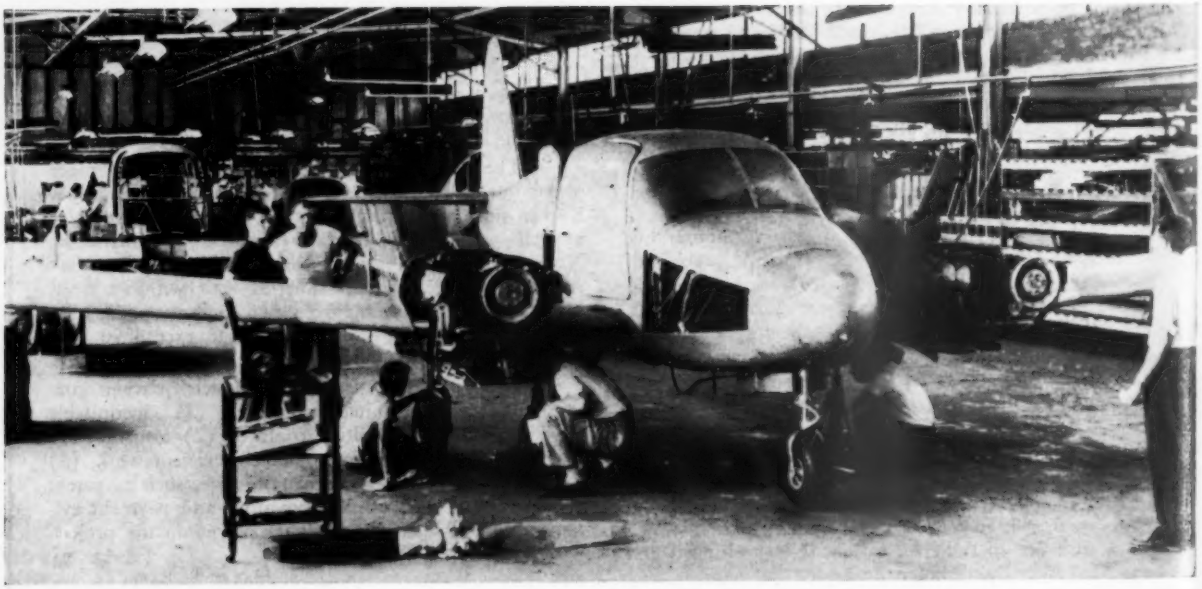
Letter contract drawbacks, especially when conversion lags indefinitely, include: (1) inequitable negotiation for a definitive contract, (2) loss of extra profits by a contractor for top-notch, efficient work, (3) many points of importance hanging fire, such as patent clauses, (4) disruption of accounting and payment systems, and (5) lack of borrowing power on the project.

. . . HARRY S. BAER, JR.

C-130 goes to sea. Cocooned for the water portion of its trip from Burbank, Calif., to Marietta, Ga., the 95-foot mock-up of Lockheed's forthcoming turboprop transport has had its upswept tail and wing section removed. Prototype C-130 is being built at the California plant, but production models will be turned out in Georgia.

Apron-shield developed by Lockheed safety engineers is designed to stop flying metal fragments. As light as a man's sport jacket, the 1/8" thick apron is made of glass-cloth, laminated with a special polyester resin.

Production Lines



Piper Twin Apaches go down the production line at the Lock Haven, Pa., plant. Tooling is nearing completion for the all-metal four-place transport, and production is well under way. Second production model is expected in early September.

Stable Platform Shown by Lear

Lear, Inc.'s entry into the stable platform field was disclosed recently when a model of such a device occupied a prominent position in a sales and service show Lear organized to display its entire line of products to the industry.

The Model 2003A stable platform consists of an inner frame stabilized by three gyros and suspended about three or more axes to allow the aircraft to move freely about it.

It establishes and maintains a precise angular reference and provides simultaneous outputs for automatic flight control, flight instrumentation, airborne armament systems, radar and camera stabilization systems and navigation systems.

A three-axis model is for limited attitude aircraft and a four-axis unit is for unlimited attitude aircraft. The three-axis unit includes a stabilizer axis, precision axis, and spin axis. The four-axis unit has an outer roll axis, inner roll axis, azimuth axis, and pitch axis.

All three divisions of Lear—Grand Rapids, Romec, and Learcal—combined to provide a complete showing of the company's widely diversified line of accessories in a one-package deal. It was first put together for a showing at Wright Field. It proved so effective there plans were made to extend the program to include industry showings, starting with a one-week stand at the Hollywood Roosevelt Hotel in Los Angeles.

Afternoon and evening showings were scheduled, with top men from the various sections of the company assigned to describe their particular products and answer questions.

The road show group is headed by Al Lawrence, contracts manager, assisted by B. K. Stevens on electro-mechanical devices; Art Naylor on stable platforms; Jim Brown on autopilots; Bob Bell on electronic miniaturization; Nils Eklund on Learcal developments, and Rusty Atkinson on Romec pumps. Naylor also doubled on gyros at the Los Angeles sessions. Following Los Angeles, the show was taken to San Diego and then to Seattle. It is to be taken east this fall.

Shroud Cuts Heat

A special radio rack shroud designed by Douglas Aircraft Co. to reduce heat radiation from electronics equipment into the crew compartment is being tested on one of American Airlines' new DC-6A cargo transports. Flight engineers are recording temperatures both with and without the shroud to determine if the present design is satisfactory.

West Coast Talk

By Fred S. Hunter

WILLIS HAWKINS, chief of preliminary design at Lockheed Aircraft Corp., drops a hint of what our **Clarence Belinns** and **Jack Connellys** might begin to look forward to in the way of future equipment. A vertically rising feeder plane, he says, may be just around the corner. This doesn't necessarily mean Lockheed is designing such a craft right now. Nor is Hawkins committing the corporation to such a project when he says he personally would like very much to work on the design of a jet-powered corporate transport that would fly at 500 or 600 mph—or maybe even 700 mph—and have a range of 2500 miles. But it might be interesting to make a mental note of these two items, and then take a reading about this time of year in 1955 and see who is up to what.

• •

Convair's test pilots scheduled for the upcoming F-102 are getting in some advance training on hot interceptors with a North American F-86D borrowed from the Air Force. Another group of company test pilots due for some jet training are Bill Morrisey's boys at Douglas-Long Beach, who are to get ready for the jet B- and RB-66. They'll learn wherein jet power differs from piston power with a Lockheed T-33.

• •

Keep your eye on **Bob Prescott** when the first U.S. jet transports make their appearance. He'll more than likely buy a fleet and then lease the planes out. Bob was playing true to form when he recently signed a nine million dollar contract to lease four Douglas DC-6A's to Northwest Airlines. He has been bringing extra cash into the coffers of the Flying Tigers in this fashion ever since 1947 when he negotiated his first lease of a C-54 to Philippine Air Lines for an operation in the Pacific. His biggest lease transaction, prior to the NWA contract, was for four C-54's for more than a year to Near East Air Transport. Prescott spent most of this period abroad personally supervising operations, while **Fred Benninger** stayed home to run the air freight line. He strongly believes in the principle of the equipment lease; thinks it will spread in the aviation field just as it has with other forms of transportation, particularly as higher airplane prices increase the strain on capital for the carriers.

• •

When the Institute of the Aeronautical Sciences unveiled its replica of the Wright Bros. plane recently, an interested spectator was Tony LeVier, Lockheed's chief engineering test pilot. After a minute inspection of the craft, he shook his head dubiously: "Now how in the world do you suppose they made that elevator work?" he asked.

• •

WEST COAST MISCELLANY—Grand Central Aircraft's Glendale facility, predominately military a year ago, is **now 100% commercial.** . . . Lockheed didn't just skip over 1149 when it went to 1249 to designate its turboprop Super Constellation. Lockheed originally had **two turboprop Super Constellation designs,** one the Model 1149 for Allison T38 engines and the other the Model 1249 for P & W T34's. . . . AIA's new Guided Missile Committee certainly can be said to have made a logical choice in picking **E. P. Wheaton,** chief of Douglas Aircraft's missile design section, for chairman. **Douglas is active in the entire missile field,** including air-to-air, air-to-surface, surface-to-air and surface-to-surface, has 15 different missile projects in progress, and has mobile assembly lines in operation in missile production. . . . **Dispatcher Frank Eastman** will have the distinction of being Western Air Lines' only 25-year employe for the two week period October 1 to October 15, then **Edgar Estchel,** foreman at San Francisco, will join him. . . . **Hufford Machine Works,** makers of big stretch presses, is branching out into the electronics field. . . . Gil Magill's Rotor-Craft Corp. is reported to have recently run tethered flight tests on its **one-man helicopter.**

• •

UNITED AIR LINES ADOPTS NEW BENDIX GLIDE SLOPE RECEIVER!

After exhaustive evaluation in the Engineering Laboratories at the Overhaul Base at San Francisco, United Air Lines has chosen the Bendix MN-100A Glide Slope Receiver as standard for their new fleet of Douglas DC-7 Airplanes. Plans include eventual use of the MN-100A throughout United's fleet of DC-6's and Convair 340's.

The MN-100A is a truly new Glide Slope Receiver—not just another modification, revision or re-packaging of old designs. The quality of this new design is such that it is unmatched in day-after-day reliability of its course indications under wide changes of temperature, voltage, signal field strength and other operating conditions. For further details write to Bendix Radio, 2120 N. Charles St., Baltimore 18, Md.

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Extra Section

By Wallace I. Longstreth
Managing Editor, *Traffic News*

THE MEN WHO WORK with airline tariffs are thought of as a breed apart from the daily scene, people who frequent a realm bound by "and/or" and/or "except as otherwise noted." It isn't so. Tariff men frequently encounter things which take them well beyond the sharpened point of their pencils. Last month the presumed calm of the tariff world was unsettled a bit when Air France offered to carry "Mannequin Busts, plastic" from New York to Paris for 59¢ a pound. Conjecture gave way to research and returned to conjecture after Webster stated that a mannequin was "An artist's, tailor's, or dressmaker's lay figure," or "A woman hired to display gowns by wearing them, as at a costumer's or on the stage." The Civil Aeronautics Board, for reasons unstated, refused to let the rate go into effect, although the French flag carrier had declared that there was a great quantity of the plastic things ready to be shipped, and that the shipper wanted to get them to Paris as quickly as possible. In a country where cabinets fall over every conceivable issue, what crisis will be occasioned by this rebuff? Will France, where fashion is king, decide to rebut?

• •

While the case of the plastic busts was fascinating to consider, it is not the only strange and wonderful rate to come along. Pan American had a rate of 19¢ a pound for a minimum shipment of 3,300 pounds of gold bullion from Managua to Miami. That's a lot of bullion. At $36 an ounce, such a shipment would be worth well over $1 million. Stated another way, the shipment would provide more than enough gold for wedding rings for every unmarried woman over 21 in Washington.

• •

Another item which has caused some wonderment is the special rate on betel leaves from Calcutta to New York, which requires a minimum shipment of 220 pounds. Who in New York has such a mad passion for betel? Maybe the angle worms being shipped from Frankfurt to New York in quantities of not less than 220 pounds. At least, all of the major trans-Atlantic carriers now have special rates for angle worms, presumably because there is a lot of traffic of that sort.

• •

Such presumptions are not always valid, however. In the bygone days (so the story goes), one of Capital Airlines' pilots was building himself a shanty near a lake not far from New Orleans. Part of the building was to be of marble quarried in New England. The pilot, on CAP's New York-New Orleans run, would load a slab or two aboard each flight he was taking out, and when he got to New Orleans, would stack the stuff behind the operations shack until he had a truckload to go out to his project. One day, an Eastern Air Lines agent spotted the marble coming off the plane, discovered the stack behind the operations shack, and concluded that Capital was doing a thriving business hauling marble. Right away, Eastern published a special rate on marble. Capital's management, unaware of the pilot's activities, filed a marble rate to meet Eastern. Before long most of the domestic airlines had special rates on marble. Marble, unfortunately, still tends to travel via surface, although the airlines still have the marble rates—and hope.

• •

Hope could very well have prompted Air France's special rate for "Baits." Not the carrier's hope, but some fisherman who sighed, too loud, that the fish over here weren't biting. Starting August 30, Air France can fly European bait to him (in New York) for $1.10 per kilo (2.2 pounds), but he has to order 100 kilos.

FINANCIAL BRIEFS

Eastern Air Lines' first-half earnings totaled $2,482,313, or $1 a share (up from 63¢ last year) on $76,908,474 gross revenue (up 29.5%). Earnings do not include profits from sale of planes replaced by Martin 4-0-4's and Super Constellations.

• •

Bell Aircraft Corp. reports $1,891,010 net for first six months on $74,932,606 sales, against $894,194 on $58,536,145 in 1952 first half.

• •

Beech Aircraft Corp. had $1,040,206 profit on $74,863,680 sales for nine months ended June 30. Quarterly dividend of 25¢ per share will be paid August 20 to stockholders of August 10.

• •

Northeast Airlines netted $34,253 in first half on $3,652,679 revenues, against $545,761 on $2,870,594 in same months last year.

• •

Northwest Airlines netted $302,500 in first six months on $29,095,000 revenues, against $525,000 loss on $24,657,600 revenues in same 1952 months.

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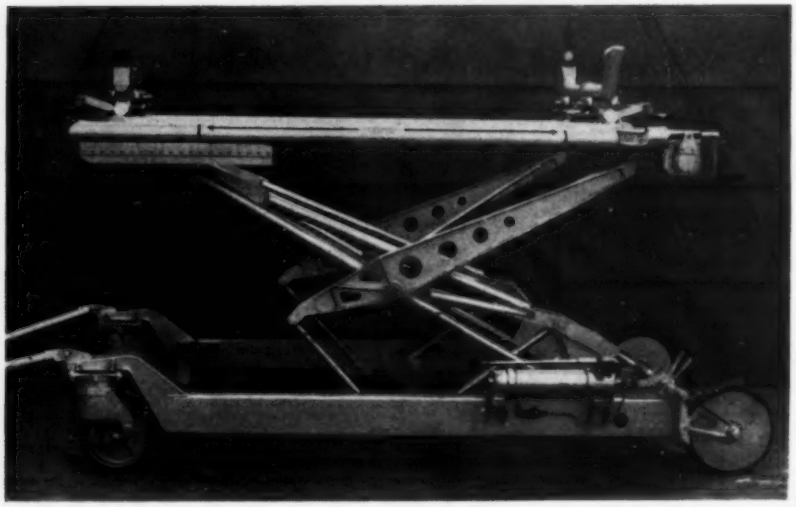


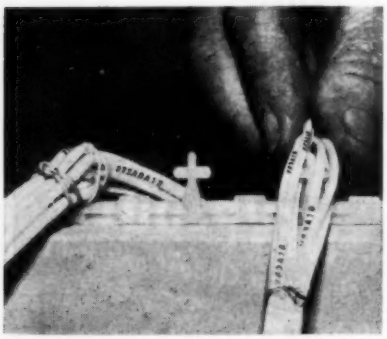
New Stand Speeds Jet Engine Work

A single maintenance stand to simplify the movement and installation of various types of jet and turboprop engines has been designed by Lockheed Aircraft Corp. A hydraulic-lift type cart, the new Lockheed stand has 50% more load capacity than previous types, and can raise loads up to 5000 pounds.

Past practice has been to build such stands to the individual specifications of each make and model of engine, whereas the new easy-lift machine offers one standard piece of equipment for this purpose.

Cart is mounted on solid, castering wheels and is more maneuverable than previous types, according to Lockheed. Lift power is supplied by a three-speed hydraulic pump, and the lift itself moves 48″ vertically and can be finely adjusted for roll, pitch, yaw, longitudinal, and lateral movements.

Overall dimensions are 50″ tread, 96″ wheel base, 62″ width, and 114″ overall length, not including towbar.



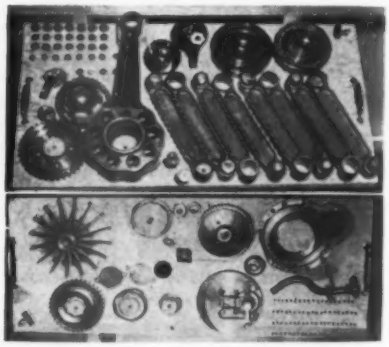
Plastic Wire Support Replaces Clamps

Boeing Airplane Co. has adopted the use of a new plastic wire support which costs less than three cents, but which it expects will save as much as $269,500 in the Air Force KC-97 production program alone. Similar savings are anticipated from its use in both the B-47 and B-52 projects.

The new clamping method, which consists of six du Pont nylon plastic crosses anchored to a common base, originated with Boeing shop foreman Harold Teichroew. After successful experiments with its use on the mock-up and prototype construction of the B-52, Boeing adopted it as a production item in the manufacture of the B-47 and the KC-97.

Principal of the plastic "tombstone" cross clamp is that the wiring holds firmly to the support, instead of the support clinging to the wire, as is the case with old-time clamps. Using the new units, the wire bundles are spread apart and slipped over the cross, and are then fastened with a string using a specially developed "tombstone hitch." The plastic units can either be attached to the pre-planned parts of the fuselage and the wire bundles installed in the assembled airplanes, or the supports and wiring can be joined in wiring shops and the complete package installed in the airplane at one time.

Actual price of the new supports, Boeing estimates, is 2.7¢, a big saving when compared with ring clamps, which cost as high as 30¢ each. In the KC-97 project these unit cost savings are further magnified by a reduction in the total number of clamps needed to do the same job. Where 9500 old-type clamps were used, the design of the plastic "tombstone" permits the same installation using only 6500 supports at a weight saving of 150 pounds per airplane and a reduction of 500 man-hours in labor.



Engine Parts Collect On Stock Boards

Southwest Airmotive has adopted a system of parts handling for its engine build-up shop which is showing good results in eliminating one major production problem, that of the lost time often spent in tracing down the needed parts and materials to carry a job through from start to finish.

The device is a stock board, designed by Southwest's overhaul supervisor L. J. Beimer, which mounts all of the bits and pieces, from major assembly items down to nuts and bolts, in one place. It permits the mechanic to tell at a glance whether or not the required material for a given operation is on hand before the work is started.

Southwest now uses the stock board for such assemblies as intake and exhaust systems, power section components, impeller assemblies and accessory drive sections, but the proven success of the innovation in these areas is fast prompting its adoption in all sections of engine assembly.

AVIATION TURBO OILS

15 AND 35

The only lubricating oils pacing jet engine development

Esso Aviation Turbo Oils 15 and 35 are the only synthetic gas turbine lubricating oils in use today in substantial quantities which will stand up to the operating conditions of jet engines of enormous thrust now being developed. These oils are the direct outcome of technical research and foresight on the part of Esso aviation lubrication specialists working in close cooperation with British and U. S. aircraft engine designers and builders.

Why Synthetic Lubricants?

To meet the needs of today's gas turbine engines an oil must possess quite remarkable properties. Not merely must its viscosity-temperature characteristics be exceptional, but its pour point, flash point, volatility, high-temperature stability and load-carrying properties must all have advantages not possessed in combination by those lubricants formerly used.

The oil must permit rapid engine starting and be pumpable at very low temperatures. At the same time it must effectively lubricate the critical turbine bearings on both turbo-prop and turbo-jet engines at very high temperatures and have the ability to maintain the perfect condition of the propeller reduction gears on turbo-prop installations.

These requirements are not readily fulfilled, and cannot be met completely by a mineral oil even of the very highest quality.

But Esso Aviation Turbo Oils 15 and 35 satisfy them all.

Fully Proved Lubricants

Recognizing these facts at an early stage in gas turbine development, Esso research teams in Britain and the United States concentrated their efforts in producing synthetic oils equal to these new needs. Their results are Esso Aviation Turbo Oils 15 and 35, aircraft lubricants of proved efficiency.

E. A. T. O. 35 is now generally used in all latest types of gas turbine engines tested and flown in Britain. It is a fact that some of the latest British engines would be unable to run at full power without using E. A. T. O. 35.

E. A. T. O. 15 meeting Pratt & Whitney Aircraft specification P&WA-521A was used during the testing and development of the Pratt & Whitney Aircraft J-57 jet turbine engine and is an approved lubricating oil for this latest high-power axial-flow engine. E. A. T. O. 15 also is the only oil currently recommended for the Curtiss-Wright J-65 Sapphire jet engine for all power ratings.

For these reasons E. A. T. O. 15 and 35 are invariably used for the high-thrust jet engines now being developed in the U. S. and Great Britain – engines which have never known a mineral lubricating oil.

An Economic Investment

Gas turbine engines consume only a fractional amount of these synthetic oils per hour (less than a pint) but E. A. T. O. 15 and 35 will enable engines to maintain high power over long periods without loss of their unique properties. The cost of these lubricants – only 1/25th of the fuel bill – bears favorable comparison with the cost of oil consumed in a piston engine.

Convincing Demonstration

At the 1952 S. B. A. C. Display at Farnborough, England, the Rolls-Royce Avon engines installed in the Hawker Hunter, the de Havilland 110, the Vickers Valiant, the Supermarine Swift and the English Electric Canberra (with afterburners); the Armstrong Siddeley Sapphire engines installed in the Gloster Javelin and the English Electric Canberra, were *all* lubricated with Esso Aviation Turbo Oil 35.

Leadership in research and product development are good reasons why of all the world's international airlines, 8 out of 10 use

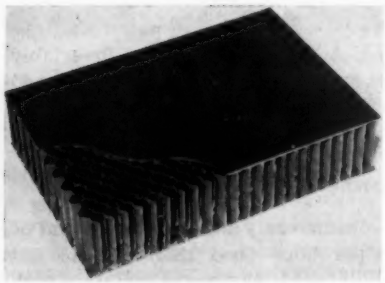
AVIATION PRODUCTS

New Products

Lubricant. The Texas Company has announced development of a new aircraft accessory lubricant called Texaco Low-Temp 1888 grease which gives satisfactory performance in the range of minus 100°F. to plus 250°F. and functions effectively for short periods beyond the 250° temperature specified in Spec. MIL-G-7421.

Versatility of the new Texaco product is demonstrated in its adaptability as lubricant for anti-friction bearings, gears, rolling and sliding equipment, some types of electronic equipment, instruments and small actuators, where starts at temperatures as low as minus 100°F. may be required.

Address: **The Texas Company,** 135 East 42nd Street, New York, N. Y.

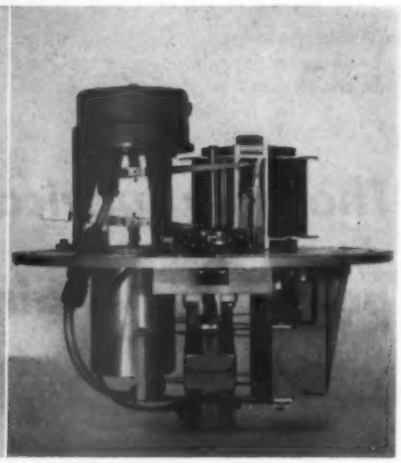


Aircomb. Aircomb, a Douglas Aircraft Co. development of a honeycomb structure of Kraft paper impregnated with phenolic resin, which when properly paneled is claimed to be the strongest material in relation to weight now manufactured, has been made available for industry consumption.

Douglas production of Aircomb at its Bell, Calif., plant has reached one-half million board feet per month and this output is expected to be increased four-fold within 12 months.

In actual use Aircomb is sandwiched between thin facings of such materials as aluminum, stainless steel, magnesium, wood, or plastics, and features durability, fire and pest resistance, excellent insulation and soundproofing qualities. Aircraft applications include construction of aircraft storage cabinets, partitions, floors and panels, interior doors, baggage racks and cabin ceilings. Military uses involve manufacture of guided missile fins, wings for robot aircraft, cargo containers, and pallets. Literature available.

Address: **Douglas Aircraft Co.,** Santa Monica, Calif.



Airborne Flight Recorder Developed

General Mills, Inc., Mechanical Division, has entered the airborne flight recorder market with a new non-electronic recorder which weighs only 16 pounds, and which, it expects, will be priced substantially below other flight recorders. Unit is called the Ryan Flight Recorder and a prototype version is now undergoing service test by United Air Lines.

As an instrument to assist in accident investigation or to obtain data for the analysis of aircraft flight operation, the Ryan recorder will provide continuous reading of airplane altitude, airspeed, vertical acceleration, time, and heading for 300 hours. In event of power failure, the device will continue to operate under spring power for approximately 10 minutes, and during exposure to high temperatures, such as experienced in crash fires, it will withstand exposure to 2000° F. temperatures for 30 minutes without destruction.

The new General Mills recorder requires no photographic process, magnetic playback, or other special process to obtain the data. The means of recording is direct, with a stylus embossing the data on an aluminum foil 2¼" wide and one mil thick. For immediate scanning of the data a transparent overlay can be used, and for precision analysis, a toolmaker's microscope or a photographic enlargement can be employed.

Design of the recorder, which is electro-mechanical, stresses simplicity. No electron tubes are included in its makeup, no remote pickups are required, and only direct connections to the aircraft pitot-static system are necessary. The recording chart is driven by a 28-volt, d-c motor, and by use of a clock escapement mechanism and a spring the speed of the chart remains unaffected by variations in voltage supply from 22 to 32 volts.

The range of functions and accuracy of the recorder includes:

- **Indicated airspeed:** from zero to 500 mph within an accuracy of plus or minus two per cent of full scale. Speed range can be increased by simple modification, according to the manufacturer.
- **Altitude:** under standard pressure conditions, from minus 1000 feet to plus 40,000 feet, also within plus or minus two per cent of full scale.
- **Vertical acceleration:** from minus three to plus 12g, accurate within plus or minus 0.2g.

The recorder with a fireproof case installed is 13½" long x 16" wide x 15" high. For research or special testing purposes, a non-fireproof model weighing only 12 pounds and measuring 11½" x 14" x 13" is available.

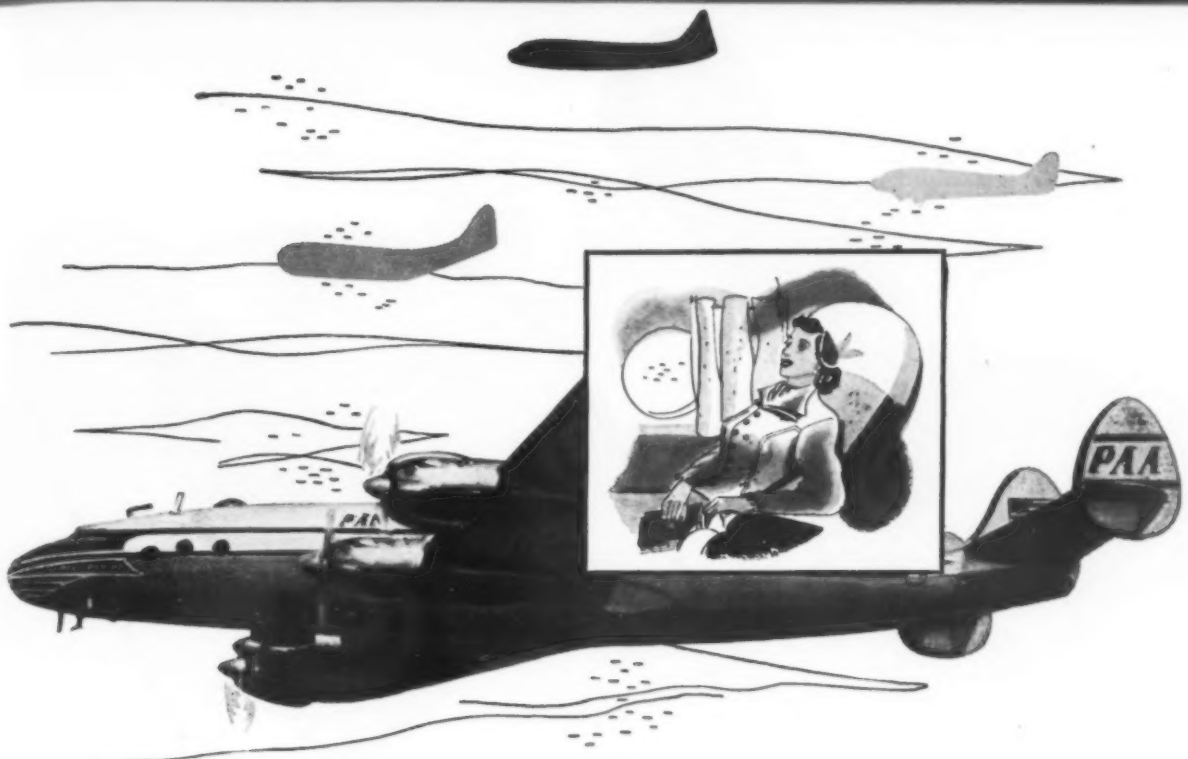
Address: **General Mills, Inc.,** Mechanical Division, 1620 Central Ave., Minneapolis 13, Minn.

Heater. Continuous pressure and constant temperature for hot spray application of lacquers, enamels, and liquid plastic compounds is provided by a new Circa-Flo Pressurematic heater, according to the manufacturer, the Spee-Flo Co.

The unit is available in two sizes, one rated at seven gph flow and another at 14 gph, while maintaining a 160°F. hot spray temperature at the gun. Pressure source is a gearless, centrifugal pump powered by an explosion-proof motor. Full heat on the units is reached in five to 10 minutes.

Address: **Spee-Flo Co.,** 720 Polk Ave., Houston, Tex.

Light. Portable electric drill with built-in work light now being produced by Fairchild Industries weighs three pounds and is designed to eliminate the bother and inconvenience of other lighting for



CABIN COMFORT

To give passengers cool comfort in hot summer weather, forward-looking airlines are modernizing their cabin pressurization and air conditioning equipment by installing Stratos high capacity cabin superchargers and refrigeration units.

Capable of handling the requirements of high density aircraft, Stratos units are replacing older equipment in Constellations and Convairs and have been ordered in quantity by the Air Force.

Stratos superchargers and air cycle units assure the airline operator the most for his air conditioning dollar. They have established outstanding service records. The highly efficient Model B-60 Bootstrap cooling unit illustrated below, for example, has a specified overhaul period of 2500 hours.

MODEL B60 REFRIGERATION UNIT

Axial flow turbine • Rated Flow 62 lbs/min. • Discharge temperature, approximately 0°F. on 100° day

FOR MORE INFORMATION WRITE:

STRATOS

A DIVISION OF FAIRCHILD ENGINE & AIRPLANE CORPORATION

Main Office and Plant: Bay Shore, Long Island, N. Y.
West Coast Office: 1355 Westwood Blvd., Los Angeles 24, Calif.

•

OTHER STRATOS PRODUCTS

Air-Turbine Drives • Cabin Superchargers • Air Cycle Refrigeration Equipment
Air Moisture Separators • Mass Flow Valves • Emergency Disconnects

"Plug-in, plug-out" simplicity in Avien's "TWO-UNIT" FUEL GAGE

This "repackaging" of Avien's capacitance-type fuel gage is 50% lighter and needs no field adjusting.

Up until now, most fuel gaging systems needed four units: a tank unit, an indicator, a bridge-amplifier and a shockmount.

No field calibration was required for the Avien tank unit or indicator. Avien held them to such close tolerances, the adjustments for individual installations were actually "built-in."

The bridge-amplifier (the "black box") was a different story. This intermediate unit was supplied as a common part, for universal application. And that's where field calibration *had* to be made.

There was only one answer, as far as Avien was concerned. The "black box" had to go.

Now, in the Avien Two-Unit system, the necessary components for the bridge and amplifier functions have been built into the indicator case. The "black box" is eliminated, and so are many parts which were necessary to make the "black box" universally applicable.

The Two-Unit Gage gets installation down to "plug-in, plug-out" simplicity. No more field calibration is necessary — and that means that all units designed for the same aircraft are interchangeable. Avien units are now all "shelf items."

To install the Two-Unit Gage, you *don't* need trained personnel, you *don't* need specialized equipment, and you *don't* need calibration instruction or data.

This new "package" brings savings all along the line. The basic system is reduced in weight by 50%. Installation time is cut. Less wiring and connectors are needed. Less maintenance is required. Trouble-shooting becomes easier. And fewer parts must be stocked for maintenance and repair.

As in the previous system, additional functions for fuel management can be integrated into the basic gage — and with less complexity than ever.

The Avien Two-Unit Gage is now available to meet your manufacturing schedules. The indicator is available in either large or small sizes, with all varieties of dial configurations.

Every month, Avien produces over ten thousand major instrument components for the aviation industry.

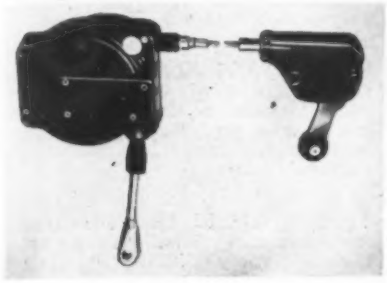
We believe that Avien's Two-Unit Gage will contribute to the obsolescence of many earlier systems, including our own. For further information, write or call us.

Avien

AVIATION ENGINEERING DIVISION
AVIEN-KNICKERBOCKER, INC.
58-15 NORTHERN BOULEVARD, WOODSIDE, L. I., N. Y.

work in dark areas. Called the "Worklite," the new drill uses a Jacobs geared chuck, a Cutler-Hammer trigger-lock type switch, and a universal type motor rated at two amperes.

Address: **Fairchild Industries, Division of Fairchild Camera & Instrument Corp.,** Burlington, Vt.



Harness Reel. Pilot's harness reel for crash landing protection which weighs only two pounds and provides automatic multi-directional protection has been developed and placed in production by the Pacific Scientific Co. Called the Sturgess Harness reel, the lightweight unit is entirely mechanical in operation, requiring no auxiliary power.

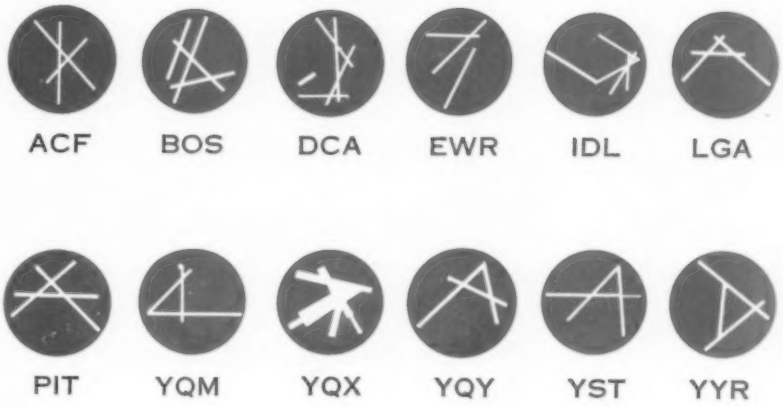
Design of the new safety equipment more than meets the requirements for type MA-2 reels in Spec. MIL-R-8236, it is claimed. In emergency the unit locks automatically regardless of the direction of the acceleration, and a manual release lever is provided for pilot disconnect.

Address: **Pacific Scientific Co.,** 1430 Grande Vista Ave., Los Angeles 23, Calif.

Receivers. Radio Apparatus Corp. has announced availability of new models AR-4 and AR-5 Monitoradio communications receivers for airport or operations office use in monitoring control tower and aircraft communications in the frequency range of 108 to 149 megacycles. Model AR-4 receiver covers the 108 to 136 mc band and model AR-5, the 118 to 149 mc band.

Radio services received by both units include control tower communications with aircraft both in flight and on ground, emergency 121.5 mc aircraft communications, CAA radio communications, airline communication and Unicom ground stations' private aircraft advisory communications.

Address: **Radio Apparatus Corp.,** 55 N. Jersey St., Indianapolis, Ind.



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Allied AVIATION FUELING SERVICES

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There's a
TVOR system
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Available with
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50 or 200 watts power
Single or dual units

Any competent radio technician can readily install one of these new TVOR systems on your landing field; private, industrial, or municipal. Rugged CAA type construction reduces maintenance problem to a minimum.

TVOR provides positive landing guidance to terminals during conditions of low visibility and is a superior airway navigation aid.

Write for further information and prices.

There are more complete Maryland Electronic TVOR's in operation, than all other makes combined.

Maryland Electronic
MANUFACTURING CORPORATION
College Park, Maryland

Technical Literature

CONTROL UNITS: Bulletin F 5783 describes the complete line of Model 200 Series Capacitrols available from the Wheelco Instruments Division, Barber-Colman Co., Rockford, Ill.

•

PRODUCTION FILM: The Utica Drop Forge & Tool Corp., Utica 4, N. Y., has made available a new 16 mm sound film showing the production of jet aircraft blades. Running time is 17 minutes.

•

ELECTROLYTIC PROCESSES: New 16-page booklet, prepared by the Westinghouse Electric Corp., 401 Liberty Ave., Box 2278, Pittsburgh, Pa., contains various methods of obtaining d-c power for electrolytic processses.

•

STRESS RUPTURE VALUES: New data card TDC-153, prepared by the Tubular Products Division of The Babcock & Wilcox Co., Beaver Falls, Penna., presents stress rupture data on B&W Croloy tubing steels and other materials for high temperatures.

•

ELECTRONIC TUBES: Amperex Electronic Corp., 230 Duffy Ave., Hicksville, L. I., N. Y., has made available a 20-page quick reference guide, tabulating proper tubes for various applications.

•

ARC WELDING: "The Inert-Gas-Shielded Metal-Arc Welding Process," by W. H. Wooding, is a 30-page pamphlet on fundamentals of the arc welding process. Available for $1 from the American Welding Society, 33 W. 39th St., New York 18, N. Y.

•

ALTITUDE CHAMBERS: Four-page bulletin covers test chambers for simulating altitudes from sea level to 80,000 ft. and temperatures from —100°F to +200°F. Tenney Engineering, Inc., 26 Avenue B, Newark 5, N. J.

•

GERMANIUM DIODES: Bulletin GD-1 describes characteristics of new line of germanium diodes produced by International Rectifier Corp., 1521 E. Grand Ave., El Segundo, Calif.

•

COMPANY PROGRESS: "The Link Story" traces developments of Link Aviation, Binghamton, N. Y., and its simulators over the past 25 years.

•

STANDARD THREAD GAGES: Bulletin SG-53 is a 20-page booklet which lists prices and tolerances of standard thread gages made by Detroit Tap and Tool Co., 8615 E. 8 Mile Rd., Base Line, Mich.

•

TEST CHAMBERS: Complete line of temperature, altitude, and relative humidity test chambers is detailed in a four-page folder issued by Bowser Technical Refrigeration, Terryville, Conn.

That's the younger generation moving in

Bomber wings at three Strategic Air Command bases are now flying Boeing B-47 Stratojets, and other bases will soon have them. These swift new jets are replacing an older generation of Boeing bombers, the renowned B-29s which during the last war helped write valiant chapters of air history.

The newly equipped Air Force units are headquartered at bases in Florida, Arizona and California. Each unit also has a complement of companion Boeing KC-97 aerial tankers. Other SAC wings, overseas and in the United States, are equipped with Boeing B-50 medium bombers.

The Stratojet flies ten miles a minute, and is capable of operating at altitudes well above 40,000 feet. It's classified as a medium bomber, yet carries a bomb-load of ten tons. Pilots report that it "handles like a fighter."

Revolutionary design gave the Stratojet a performance not previously equalled by aircraft of its dimensions. It was the first bomber to enter the over-600-miles-an-hour class. The B-47's pioneering design, its jewel-like tolerances called for equally advanced manufacturing methods. Those methods were devised and perfected by Boeing production and engineering experts.

Today in its B-47 program, Boeing is turning out even more pounds of aircraft per man-hour than during its World War II production of the B-29s.

Like earlier Boeings the B-47 Stratojet is imaginatively engineered, ruggedly built. It adheres to the uncompromising design and construction standards that, for 36 years, have made the name Boeing stand for dependability.

Boeing is now building a prototype jet transport, designed to be adaptable for either military or commercial use. The new plane has the benefit of Boeing's unparalleled experience in multi-jet aircraft. It will fly in 1954.

BOEING

Facts *and figures!..*

Figure:

Now, cloud-clobbering classmates, gather 'round and we'll show you the difference between a lure and allure. Obviously, Rosemary Gowen (21, 118 lbs., 5'7", brown hair and eyes) has both. She has hooked herself with one, while reserving the other to angle for, say, a bass-voiced flying fish at the beautiful concrete beach of Southwest Airmotive in Dallas.

Fact:

For hundreds of pilots throughout the Western Hemisphere, there's allure aplenty in the quality, dependability and reasonable prices of the Southwest Airmotive Instrument Shop. Recently expanded and newly-equipped, this shop can do everything from setting a clock to custom-building a complete executive aircraft panel. Write for details and prices.

Southwest Airmotive COMPANY
LOVE FIELD DALLAS

WORLD'S PREMIER AIRPLANE FABRIC

lighter — stronger — smoother

FLIGHTEX

FLIGHTEX FABRICS, Inc. • 93 WORTH STREET • NEW YORK 13, N. Y.

Leading Manufacturers of Fabric and Tapes for the Aircraft Industry

FLIGHTEX FABRIC

Export Representative
AVIQUIPO, Inc.
25 Beaver Street, N. Y.
Cable: Aviquipo

People

MANUFACTURING

Rollin M. Russell has been named manager of Continental Aviation & Engineering Corp.'s Turbine Division. Previously executive engineer in charge of the company's Pacific coast operations, Russell will now make his headquarters in Detroit.

Gordon Israel, formerly assistant chief engineer of Grumman Aircraft Engineering Corp., has been appointed chief aircraft engineer of Lear, Inc.

Israel

Anderson

R. L. Anderson, director of engineering for Chicago & Southern Air Lines prior to its merger with Delta Air Lines, has been appointed aviation service manager of Champion Spark Plug Co.

Clarence I. Rice is the new manager of aviation sales for the Bendix Radio Communications Division of the Bendix Aviation Corp. The Division has also appointed **S. A. Meacham** to head the recently opened sales office in Dallas which serves the states of Texas, Oklahoma, Kansas, Missouri, Arkansas, and Louisiana.

L. E. Williams recently resigned as vice president and Washington representative of McDonnell Aircraft Corp. Williams has served as McDonnell's eastern representative since 1945.

H. Walton Cloke, for the past three years Washington public relations director for Kaiser Motors Corp., has been made coordinator of public relations for the Kaiser companies in Washington.

Ernest Wenigmann has been appointed Republic Aviation Corp.'s factory superintendent. Prior to joining Republic, Wenigmann was vice president of manufacturing for Piasecki Helicopter Corp.

Dr. Clyde McKinley, formerly associated with the research staff of General Aniline and Film Corp., has been appointed director of research for Air Products, Inc. McKinley will assume his new post with the Allentown firm September 1.

J. C. Felix, formerly controller of Consolidated Vultee's Fort Worth Division, has been named to succeed **R. R. Dickerman** as controller of Rohr Aircraft Corp. Dickerman has been appointed staff assistant at Rohr.

Norman J. Burke has moved up from treasurer to vice president of Prewitt Aircraft Co.

Joseph M. Mergen has been appointed chief propeller engineer in charge of the newly created Propellor Engineering Section of Curtiss-Wright Corp.'s Propellor Division.

William A. Aberg, recently retired from the Navy's Bureau of Aeronautics after 30 years of service, has been named special consultant to the E. W. Bliss Co. of Canton, Ohio.

Don T. McKone, formerly assistant general manager of Aero-Coupling Corp., west coast subsidiary of Aeroquip Corp., is now in charge of Aeroquip's recently acquired plant at Van Wert, Ohio.

Beech Aircraft Corp. has reorganized its engineering and appointed the following three veteran Beech employes as section heads: **A. S. Odevseff,** military projects engineering section; **Herb Rawdon,** commercial projects engineering section; and **Dean Burleigh,** administrative and statistical engineering section.

AIRLINE

Northwest Airlines has filled six posts in its newly created Continental Division, which from St. Paul headquarters will oversee the company's activities in the United States, Alaska, Canada, and Hawaii. The six new appointees are: **Russell G. Collins,** sales manager; **T. W. Cummins,** operations manager; **M. A. Kennedy,** personnel ganager; **George E. Masters,** public relations manager; **R. W. Chambers,** properties manager; and **K. G. Schultz,** budget manager.

Wyman R. Rice has been appointed operations manager for Northern Consolidated Airlines. For his new assignment, Rice will shift his headquarters from Seattle to Anchorage.

Jim Roach, who for the past five years has been a sales engineer for Beech Aircraft Corp., has joined Capitol Airways as service manager.

O. L. Morrow has succeeded **Phillip Mann** as second vice president and a director of Aircoach Transport Association. Morrow is president of Meteor Air Transport.

The following employes have completed 20 years or more of service in the aviation industry:

• **V. Chase Wason,** Braniff Airways. Regional sales manager, Kansas City. 25 years.

• **J. L. Peters,** Lockheed Aircraft Service. General foreman, Burbank. 25 years.

• **Richard G. Brew,** Northwest Airlines. Training supervisor, St. Paul. 20 years.

• **Frank C. Judd,** Northwest Airlines. Operations vice president, St. Paul. 20 years.

• **Francis I. Jacobs,** Pan American World Airways. Check pilot, New York. 20 years.

• **Miguel Torres,** Pan American World Airways. Master mechanic, San Francisco. 20 years.

• **C. E. Young,** Pan American World Airways. Pacific-Alaska Div. traffic manager, San Francisco. 20 years.

• **Mary O'Connor,** United Air Lines. Stewardess, Chicago. 20 years.

NOW 3 NON STOP FLIGHTS TO ALASKA

TO JUNEAU . . . $55.00 plus tax
ALASKA'S CAPITAL

TO ANCHORAGE $75.00 plus tax
ALASKA'S LARGEST CITY

Fares quoted above are from Seattle
$7 additional for service from Portland via PNA

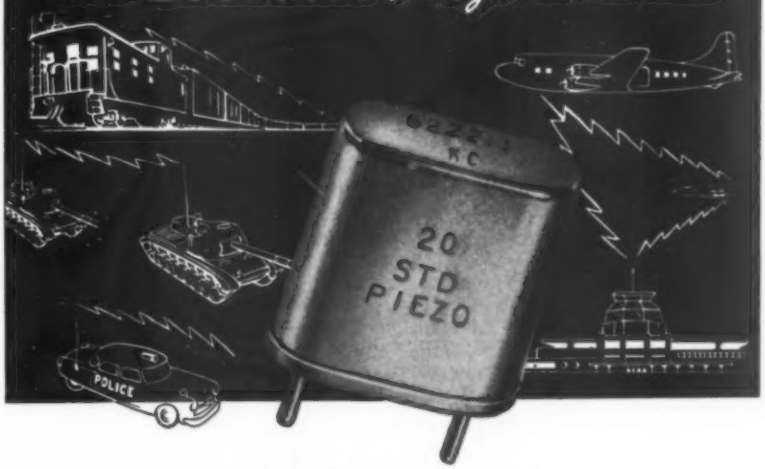
For schedules and reservations see your travel agent, or write General Traffic and Sales Office, 1626 Exchange Bldg., Seattle 4, Wash.

PACIFIC NORTHERN AIRLINES
The Alaska Flag Line

22nd year of serving Alaska

every day from the Pacific Northwest
in comfortable 4 engine PNA FLAGLINERS

ALWAYS . . . "on the beam" with *Standard Piezo* CRYSTALS



If it is important for your transmitting and receiving equipment to stay "on the beam"—always, regardless of atmospheric extremes and rough handling—be sure to specify Standard Piezo Crystals. They're built to take it. Send for our completely illustrated catalog or submit your problems to our engineers for recommendations.

Standard Piezo Co.
CARLISLE, PENNA

Built to get there NOW!

F-94C Starfire combines defense with economy!

No fighter-interceptor can get into the air quicker, and none can climb faster than the Lockheed F-94C Starfire. This new all-weather interceptor for the U.S. Air Force is now defending key American cities from possible air attack. The Starfire was designed to reach target altitude in record time.

Combining greater flight availability and lower maintenance costs with superlative performance, the F-94C Starfire actually delivers more defense for your dollar.

Lockheed

AIRCRAFT CORPORATION

BURBANK, CALIFORNIA, AND MARIETTA, GEORGIA

Look to Lockheed for Leadership

Lockheed

Builds Plane No. 25,000 and Jet No. 5,000

Lockheed airplane Number 25,000 rolled off the production lines recently in Lockheed's Burbank, California, plant. Significantly, it was an F-94C Starfire Jet Interceptor, newest member of Lockheed's pioneering jet aircraft family. Later, another Lockheed Starfire became the 5,000th Lockheed jet to be built.

There's a reason for the quantity production of F-94C Starfires. Here's a military jet that does an outstanding job and saves money, too.

Here's How It Does It

Economy is important with the Air Force, and here's how the Starfire helps on the budget:

An economical airplane is one that performs its mission with greatest efficiency and offers maximum availability on the ready line. Maximum time between servicings means *lower maintenance costs*. More important, it means *fewer planes are needed*. The U.S.A.F. provides both types of economy with the Starfire.

2-Man Team Helps

Since the Lockheed Starfire is a 2-place interceptor, it utilizes the cooperative efficiency of a 2-man team to compute the tactical problem and perform all other split-second operations of intercepting an enemy at 600-mph-plus speeds.

This all-weather interceptor is equipped with automatic electronic controls — Hughes Radar System, Westinghouse Automatic Pilot, Sperry Zero Reader—and other advanced devices, making it very nearly an automatic airplane.

A "Pilot's Airplane"

Reports coming in from the field indicate that Lockheed has again produced a "pilot's airplane." Air Force pilots like the Starfire and like to fly it. They find it simple to fly and rock-steady under actual instrument conditions.

Here is the happy combination of important factors in one reliable airplane: (1) Superlative performance — (2) Easy maintenance — (3) Pilot popularity — (4) More defense for your dollar.

Airline Commentary

By Eric Bramley

Travel agents—mighty important people in sale of international travel—think the trans-Atlantic air fare structure should be revamped. We wrote about such a plan, proposed by U.S. officials of a European airline, in the July 6 issue, and Scandinavian Airlines System sent the article to agents all over the U.S. for their comments. Results were startling.

Briefly, the proposal was to (1) raise one-way first-class fare New York-London from $395 to $440 and sleeper charge from $35 to $50; (2) eliminate on-season and off-season tourist fares in favor of a single year-round rate $40 under present on-season tariff; (3) establish a new all-year fare, limited to 21-day round-trips, of 1 1/3 tourist tariff, in order to tap the two-week U.S. vacation market.

Here's the travel agents' vote: 372 to 129 in favor of abolishing seasonal fares, 403 to 87 for lowering tourist fare, 474 to 33 for establishing the 21-day fare, and 247 to 242 against raising first-class. And, significantly, when asked whether the industry needs a new fare concept, 436 agents said yes, only 30 no. There could be some interesting discussions at IATA's next traffic conference meeting!

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Amusing story of Juan Martinez, who spoke only Spanish and who got on the wrong Pan American plane at Idlewild, ending up in Newfoundland instead of Puerto Rico. This, of course, has happened before, but the funny part was that the stewardess kept asking him whether he wanted a martini or a manhattan to drink. Speaking no English and thinking she was checking his name, he answered "Martinez." Whereupon the stewardess brought him a martini. Happened three times. Good thing PAA caught him at Gander and returned him to New York. You can drink those martinis only so long.

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The industry got quite a chuckle out of E. W. Wiggins Airways' parting gesture when the New England local service line went out of business July 31 (CAB wouldn't renew its certificate). When new routes are opened there are always air mail letters marked as "first day" covers to commemorate the event. So Wiggins pulled a switch and issued a "last day" cover, appropriately edged in black. Joe Garside, Wiggins president, is to be congratulated for accepting defeat with a smile. Incidentally, this may be the only last-day cover ever issued. Know of any others?

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TWA passed a significant milestone recently when it revealed that during the past year it flew *one billion* tourist passenger-miles. Tourists accounted for 51% of international traffic, 37.5% of domestic. Speaking of tourists, TWA claims to have taken to Europe the "largest single group of air travelers ever to cross the Atlantic." No figure is given, but they filled three tourist Connies. They're women factory workers from General Electric's Fort Wayne plant. Average age is 38, average income $57 weekly. Most of them are paying $1,022 for a 22-day tour (taking some time off without pay).

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ODDS AND ENDS: Airlines at Chicago report that the new local teletype circuit and standard message code has resulted in tremendous improvement in handling interline reservations . . . Capital Airlines' current series of direct-mail pieces aimed at convention-goers is A-1 . . . Western Air Lines is refurbishing Convair interiors. Wood trim, similar to that in new DC-6B's, is being incorporated and seat upholstery is being changed from the maroon that has been WAL's symbol for several years to sage green that characterizes DC-6B seats . . . Allegheny Airlines is getting a lot of local publicity through its program of holding directors' meetings at intermediate stops.

'Spin-Off' Corp. to Sell PAL 2-0-2's

Pioneer Air Lines has asked CAB to approve formation of a "spin-off corporation" to which it will transfer its Martin 2-0-2 aircraft and related indebtedness.

Currently converting back from a Martin to a DC-3 operation, Pioneer offered the plan as a means of possibly overcoming financial difficulties which beset it when CAB this year refused to underwrite the higher cost of Martin operations with mail pay.

The new firm, to be incorporated in Delaware, would be named Pioneer Aeronautical Services, Inc. Its corporate charter will cite as the company's principal purpose "the buying, selling, and leasing of aircraft."

Pioneer would transfer the fleet of nine Martin's (which it has been unable to sell) to the spin-off company in exchange for the new corporation's stock. Such stock would then be distributed to Pioneer's stockholders, who would not surrender any of their Pioneer stock.

The local line said the move could eliminate over-capitalization and provide a flexibility and latitude of operation not enjoyed since the execution of Pioneer's present credit agreement. Pioneer's creditor banks have cleared the deal, the airline told CAB. Board approval would permit it to become a reality.

White House Wants Balboa Hearings

Pan American, Eastern, and Panagra have won a clear-cut victory over the National-Braniff forces in the latest of many White House battles connected with CAB's New York-Balboa Case.

With the bitterly fought proceeding back in its lap, so to speak, the White House wrote CAB, in a letter dated August 7, that its original intentions were correctly construed, namely, that revised exhibits, further hearings, oral argument, etc., should be permitted to develop a more up-to-date record.

Responsible for the new development were motions of National and Braniff which claimed, in effect, that (1) it wasn't the President's intention that further hearings and a "long drawn-out" proceeding result, and (2) that White House approval was not needed for interchange phases of the case, which could be disposed of by CAB alone.

The substance of these motions was transmitted to the White House in a CAB letter dated August 3, signed by then-Acting Chairman Harmar D. Denny.

As yet this exchange of correspondence has not been made public. Significantly, insiders report that a totally different White House "answer" was prepared, one which would have been in accord with the National-Braniff motions, but it was apparently by-passed.

Thus, the case will probably move to CAB hearings in mid-September, with at least several months necessary thereafter before CAB again submits its findings to the President. Twice before CAB has found that Braniff should interchange with Eastern, and National with Pan American and Panagra for through services between New York and Latin America.

The first such decision, in June, 1951, was never acted on by former President Truman, being returned to CAB this January for "re-submission" to the new Administration. It then went to President Eisenhower, but in May this year he returned it, without approving or disapproving, for further evidence.

CAB MISCELLANY

American Airlines wants CAB to drop a case which would put Nogales, Arizona, on its routes, because a CAA appraisal indicates the Nogales airport is inadequate for AA's type of aircraft.

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Pan American World Airways applied for CAB approval, if necessary, of a special round-the-world luxury cruise in January. A DC-6B will be specially equipped for the flight, with all-expenses included in a $15,000 fare per passenger.

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Pioneer Air Lines, at its own request, has been dropped from consideration for a possible local service segment between Albuquerque and El Paso.

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A temporary CAB rule which has permitted air taxi operators to perform irregular service between points served by certificated helicopter passenger lines has been adopted on a permanent basis by the Board.

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Application for certificates to conduct helicopter operations in the St. Louis area have been filed by St. Louis Helicopter Service and the Greater St. Louis Helicopter Service, Inc.

CAB News

AS OF NOW . . .

The reasonableness of coach fares for short hops will be determined in what CAB now calls **"The Short Haul Coach Fare Investigation."** Formerly, this was referred to as **The Standard-Coach Fares Investigation.** American and Eastern are immediate carriers involved, but scheduled coach industry generally will be affected by outcome. Hearings are scheduled for October.

The "big three" route cases are lumbering along with the **New York-Chicago Case** scheduled for hearings October 12, the **Denver Service Case** set for hearings on December 7, and the **Southwest-Northeast Service Case** still delayed pending a CAB order defining the scope.

A recent novel proposal by the city of Dallas for a CAB proceeding to meet the changing needs of the southwest for local airline service will not get the immediate action sought, according to present Board thinking. It may be divided, with portions fitting into local service airline renewal cases as they come up for hearings.

Actions of non-scheduled airlines to avoid CAB enforcement hearings are losing steam. Although such an attempt by North American Airlines is still in the Federal Courts, two others, Aero Finance Corporation and Peninsular Air Transport were turned down on dismissal motions by CAB.

RECENT CAB DECISIONS

• **Eastern Air Lines'** application for Evansville-St. Louis route has been dropped from Ozark Renewal Case because CAB said Eastern wanted more than local service rights.

• **TWA's** proposed new $20.50 tourist fare between Las Vegas, Nev., and Oakland/San Francisco approved for application on 81-passenger Constellation equipment.

• **Robin Airlines'** letter of registration for large irregular carrier operations revoked for "knowing and willful" violations of the Act.

CAB CALENDAR

Sept. 3—Oral argument before the Board in North American Airlines Corporate Name Investigation. Washington, D. C. (Dockets 5774 & 5928).

Sept. 10—Oral argument before the Board in United Air Lines Route 1 Restriction Case. Washington, D. C. (Docket 2190).

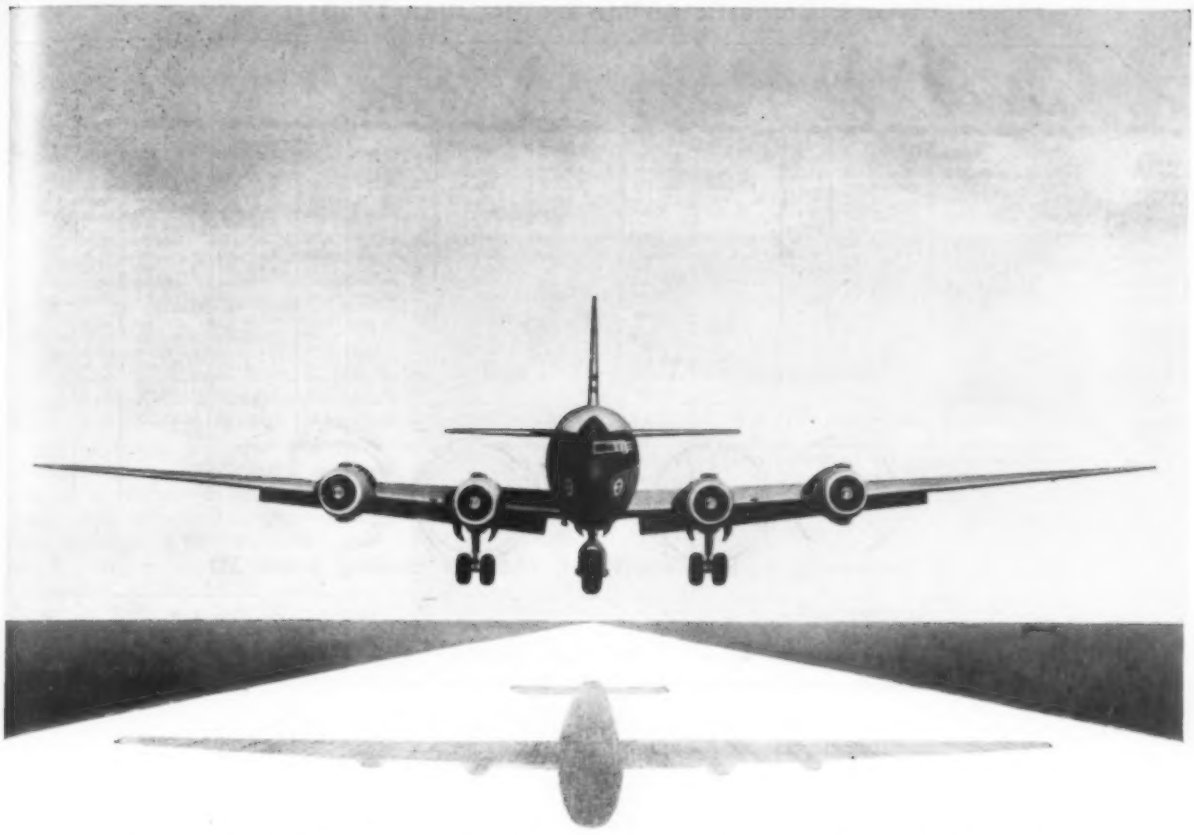
Sept. 16—Hearing in Service to Nogales, Arizona, Proceeding (American Airlines). Washington, D. C. (Docket 5984).

Sept. 21—Hearing in Continental Air Lines Renewal Case (Raton, N. M. et al.) Washington, D. C. (Docket 5869).

Sept. 21—Hearing in Williston Basin Area Case (Civic Intervenors). Billings, Montana. (Docket 5777 et al.)

Sept. 22—Oral argument before the Board in Reopened Southern Service to the West Case. Washington, D. C. (Docket 1102 et al.).

Sept. 28—Hearing in Ozark Air Lines Renewal Case. Tentative. (Docket 5988 et al.)



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It's a friendlier, more personal way of travel. You're treated *as a guest*. It's speedy—crosses the whole continent in as little as 9¾ hours. It's smooth and comfortable. It's clean. It's enjoyable. With all these advantages, you'd think it would cost more. But today it often costs *less* than first-class rail plus lower berth!

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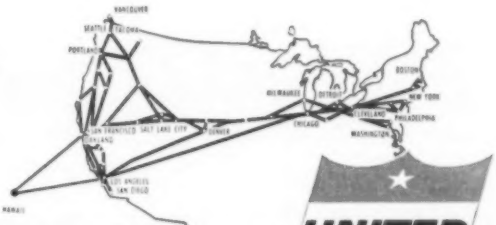

COMPARE THE FARE AND YOU'LL GO BY AIR

UNITED AIR LINES

Copr. 1953 United Air Lines

U. S. Domestic Airline Traffic, June 1953

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor %	Mail Ton-Miles ***	Express Ton-Miles	Freight Ton-Miles	Total Ton-Miles Rev. Traffic	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Comp'd
American	550,736	315,669,000	423,106,000	74.61	1,411,058	820,980	4,062,700	36,344,232	56,323,879	64.53	8,848,818	8,811,096	99.74
Braniff *	105,271	40,076,000	69,873,000	57.36	153,647	96,478	252,720	4,334,492	7,842,576	55.27	1,858,615	1,861,026	99.07
Capital	217,257	69,847,000	108,106,000	64.61	195,592	244,275	342,158	7,458,594	14,637,858	50.95	2,575,554	2,545,338	98.96
Caribair	9,147	764,000	1,352,000	56.51	984	. . . .	1,951	72,363	139,254	51.96	53,973	49,865	99.70
Colonial	35,099	8,670,000	13,949,000	62.15	11,933	7,305	18,077	844,501	1,502,009	56.22	404,799	363,258	99.68
Continental	32,866	12,912,000	22,423,000	57.58	41,591	15,898	73,290	1,369,252	2,847,253	48.09	673,416	665,580	99.89
Delta-C&S **	135,914	56,694,000	88,038,000	64.40	229,489	192,050	539,242	6,397,319	10,512,585	60.85	2,437,290	2,452,198	99.22
Eastern	394,424	185,864,000	299,704,000	62.02	481,684	296,206	652,540	20,243,559	40,210,441	50.34	5,507,710	5,417,995	99.66
Hawaiian	38,335	5,199,000	7,724,000	67.31	2,820	. . . .	133,296	561,363	1,092,925	51.36	271,920	190,028	99.60
National	58,802	40,008,000	58,012,000	68.97	109,562	39,007	416,871	4,622,763	7,119,993	64.93	1,287,980	1,276,890	99.30
Northeast	46,983	9,208,000	16,089,000	57.23	12,207	12,971	31,565	889,507	1,582,748	56.20	539,949	528,886	98.30
Northwest	103,125	74,959,000	107,146,000	69.96	287,706	152,789	314,035	7,940,582	12,413,098	63.97	1,832,018	1,861,694	97.43
Trans Pac.	16,006	2,050,000	3,735,000	54.87	1,864	53	6,831	169,395	315,455	53.70	133,400	105,524	99.49
TWA	269,974	224,489,000	274,696,000	81.72	1,030,782	616,618	1,631,668	24,751,073	33,830,211	73.16	5,343,184	5,440,421	97.34
United	367,844	254,002,000	333,214,000	76.23	1,462,893	785,461	2,263,693	28,857,754	48,137,916	59.95	7,127,592	7,247,561	96.94
Western	71,656	32,416,000	52,324,000	61.95	128,762	67,829	112,167	3,406,141	5,888,269	57.85	1,214,036	1,222,965	98.72
TOTALS	2,453,439	1,332,827,000	1,879,491,000	70.91	5,562,574	3,347,920	10,852,804	148,262,890	244,396,470	60.66	40,110,254	40,040,325	98.61

* Braniff's figures do not include operations of local service route 106 operated by Braniff as result of Braniff-NCA merger.
** Merger between Delta Air Lines and Chicago and Southern Air Lines was effective May 1, 1953.
*** Includes air parcel post.
NOTE: Above figures include both scheduled and non-scheduled operations.

U. S. Domestic Airline Traffic, 6 Months Ending June 30

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor %	Mail Ton-Miles ****	Express Ton-Miles	Freight Ton-Miles	Total Ton-Miles Rev. Traffic	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Completed
American	2,737,011	1,520,909,000	2,138,057,000	71.13	8,502,013	5,306,372	23,386,440	184,925,428	285,377,629	64.80	46,930,542	47,462,768	97.95
Braniff *	596,461	223,907,000	388,554,000	57.62	929,365	606,822	1,471,648	24,417,849	44,764,058	54.53	10,837,038	11,435,007	93.90
Capital	1,071,463	344,356,000	573,377,000	60.06	1,112,397	1,464,424	1,886,718	37,371,568	78,346,574	47.70	13,696,674	13,519,519	97.05
Caribair	64,324	5,084,000	9,566,000	53.15	6,723	. . . .	9,395	460,598	972,124	47.38	375,627	360,137	99.49
C & S **	179,583	69,596,000	109,337,000	63.65	278,318	348,386	421,221	7,720,410	13,318,416	57.97	3,226,309	3,354,923	95.61
Colonial	167,280	43,236,000	75,184,000	57.51	74,690	52,224	115,033	4,330,081	8,307,678	52.12	2,153,507	1,998,504	95.07
Continental	180,321	70,795,000	131,134,000	53.99	233,281	92,677	400,132	7,517,893	15,964,332	47.09	4,042,866	3,998,625	99.43
Delta-C&S***	628,918	287,589,000	433,306,000	66.37	1,141,339	851,546	2,477,932	32,114,778	52,106,177	61.63	11,456,375	11,523,925	98.61
Eastern	2,378,078	1,243,445,000	1,953,418,000	63.65	2,961,714	2,071,917	3,917,677	137,322,520	260,717,286	52.67	35,067,417	34,622,075	98.10
Hawaiian	180,967	23,827,000	42,499,000	56.06	18,745	. . . .	677,477	2,680,871	5,636,501	47.56	1,737,003	1,333,028	99.47
National	438,592	318,970,000	451,206,000	70.69	779,024	292,458	2,790,480	36,367,379	56,849,572	63.97	9,464,694	9,400,075	97.22
Northeast	189,541	36,779,000	66,934,000	54.95	65,927	96,336	134,420	3,671,860	6,622,870	55.44	2,328,641	2,604,749	86.78
Northwest	472,858	331,803,000	558,348,000	59.42	1,612,958	835,350	1,742,671	36,495,258	64,333,016	56.73	9,694,751	9,888,876	96.52
Trans Pac.	71,563	9,097,000	21,521,000	42.27	8,859	372	45,023	766,851	1,735,515	44.18	768,664	692,102	98.62
TWA	1,390,903	1,118,904,000	1,530,336,000	73.11	5,774,094	4,151,293	9,441,324	126,446,254	190,654,721	66.32	30,211,869	31,058,754	96.42
United	1,816,851	1,195,778,000	1,756,038,000	68.09	9,915,225	5,725,154	13,610,016	143,833,791	263,842,741	54.51	39,114,368	40,107,933	96.63
Western	406,802	169,167,000	291,399,000	58.05	770,347	362,697	647,766	17,941,777	30,791,714	58.27	6,966,197	7,144,336	97.04
TOTALS	12,971,516	7,013,242,000	10,530,214,000	66.60	34,185,019	22,258,028	63,175,373	804,385,166	1,380,340,924	58.27	228,072,542	230,505,336	97.05

* Braniff's figures do not include operations of local service route 106 operated by Braniff as result of Braniff-NCA merger.
** Figures for C & S are through April 30. Merger between Delta Air Lines and Chicago and Southern Air Lines was effective May 1, 1953.
*** Merger between Delta Air Lines and Chicago and Southern Air Lines was effective May 1, 1953.
**** Includes air parcel post.
NOTE: Above figures include both scheduled and non-scheduled operations.

U. S. International Airline Traffic, June 1953

Airlines	Revenue Passengers	Revenue Passenger Miles	Available Seat Miles	Passenger Load Factor %	U. S. Mail Ton-Miles **	Foreign Mail Ton-Miles	Express Ton-Miles	Freight Ton-Miles	Total Ton-Miles Rev. Traffic	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Completed
American	8,127	5,689,000	9,446,000	60.23	15,417	4,252	267	208,034	828,879	1,428,553	58.02	183,550	183,550	100.00
Braniff	2,720	6,517,000	15,731,000	41.43	66,460	6,985	. . . .	84,034	883,308	2,171,018	40.69	355,407	355,511	99.97
Colonial	6,619	5,125,000	7,218,000	71.00	1,661	507	. . . .	4,621	548,023	1,005,933	54.48	132,534	48,100	98.21
Delta-C&S *	3,028	4,086,000	7,138,000	57.24	5,607	996	. . . .	131,069	567,670	989,570	57.37	153,314	153,316	99.99
Eastern	14,978	22,941,000	29,766,000	77.07	54,812	. . . .	. . . .	42,359	2,466,264	4,485,736	54.98	485,834	344,512	99.53
National	7,875	3,924,000	8,158,000	48.10	4,678	. . . .	4,432	40,356	453,652	1,049,086	43.24	135,715	138,825	97.76
Northwest	8,704	14,442,000	24,356,000	59.30	118,355	23,154	16,283	708,794	2,410,257	3,716,106	64.86	574,917	541,063	100.00
Panagra	8,901	9,474,000	19,680,000	48.14	27,393	26,420	. . . .	214,361	1,325,805	2,649,513	50.04	477,510	477,717	98.84
PAA														
Latin Amer	66,805	71,841,000	100,384,000	71.57	243,731	58,950	. . . .	1,875,917	8,923,239	13,346,047	66.86	2,167,308	1,861,813	97.55
Atlantic	61,274	67,330,000	104,139,000	64.65	461,838	152,621	. . . .	866,811	8,651,629	13,486,215	64.15	1,720,545	1,650,853	97.84
Pacific	13,315	45,087,000	60,051,000	75.08	380,044	100,670	. . . .	730,647	6,022,973	9,386,497	64.17	1,083,585	1,073,777	98.81
Alaska	7,822	9,185,000	16,609,000	55.30	33,647	. . . .	. . . .	436,197	1,414,436	2,776,509	50.94	411,381	300,284	99.65
TWA	21,242	55,340,000	73,138,000	75.67	376,090	114,668	. . . .	617,235	6,915,451	9,506,312	72.75	1,509,207	1,526,237	98.38
United	5,798	14,383,000	18,586,000	77.39	52,490	. . . .	. . . .	46,242	1,591,800	2,271,693	70.07	337,144	337,144	91.89
TOTALS	237,208	335,364,000	494,400,000	67.83	1,842,223	489,223	20,982	6,006,677	43,003,386	68,268,788	62.99	9,727,951	8,992,702	98.24

* Merger between Delta Air Lines and Chicago and Southern Air Lines was effective May 1, 1953.
** Includes air parcel post.
NOTE: 1. Above figures include both scheduled and non-scheduled operations.
2. Data in above tabulations were compiled by American Aviation Publications from reports filed by the airlines with the Civil Aeronautics Board. Figures for American Airlines include that carrier's service to Mexico but not to Canada; for Braniff to South America; Delta-C&S to South America; Colonial to Bermuda; Eastern to Puerto Rico; National to Havana; Northwest to Orient and Honolulu, and United to Honolulu. Operations of U.S. carriers into Canada are included in domestic reports to CAB, in accordance with CAB filing procedures.

INTERNATIONAL AVIATION

Edited by Anthony Vandyk

INTERCOM

One of today's major problems for airlines in Europe is the "no show" passenger: at present there is a wide open situation as in the U.S. but with two important differences. One is that there are no "go shows," since to travel abroad is still quite an involved business requiring planning and time to fix up foreign currency, passports, and hotel accommodations. The second is that there is no attempt by the airlines, as there is here, to appeal to the traveling public to help lick the "no show" problem. It looks as though there will be a big effort at the IATA traffic conference in Honolulu this fall to have a penalty or forfeit imposed on the "no show."

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Like most Viscount passengers we were impressed with the low noise and vibration levels when we went with British European Airways to Copenhagen and Stockholm. We also much liked another BEA aircraft—the Ambassador (as its manufacturer calls it) or Elizabethan (as BEA calls it) It has a "get up and go" take-off akin to the Convair, plus the tremendous passenger attraction of being a high-wing aircraft. Like another British high-wing transport, the Marathon, the Ambassador has undoubtedly suffered from being a foster child. Designed and built by Airspeed, now part of the de Havilland organization, it might well have been a big export item for Britain had its development and promotion received the same treatment and priorities as a "purebred," such as the Comet or Dove.

• •

A practical move to encourage air-mindedness in France has been taken by the Byrrh company, one of the largest French *apéritif* manufacturers: it gives free "joy rides" in various parts of the country to people who normally have no opportunity to use air transport. An average of 840 passengers are given short flights each day in Byrrh's 28-seat DC-3, which is fitted with SNCASO/Turbomeca jets to assist take-off from small fields. Plane is also used as an executive transport to ferry Byrrh officials between France and Portugal. Prior to getting the DC-3, Byrrh had a de Havilland Dragon seven-seat biplane which carried many thousands of joyriders (7000 at Lyons alone). Each Byrrh passenger is insured for $14,200.

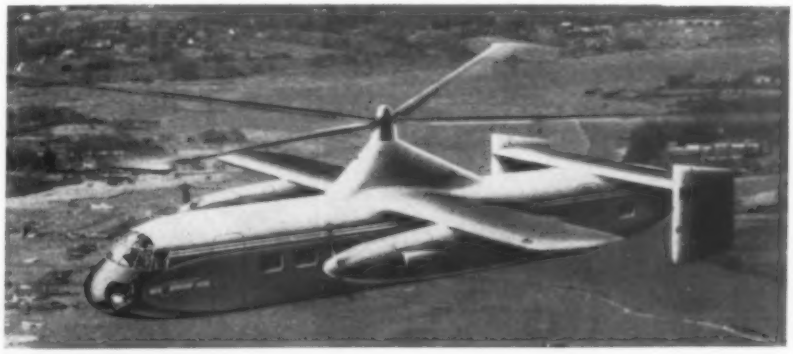
Latest version of the Saab J-29 "flying barrel" fighter is the S-29C, a photo reconnaissance version ordered by the Swedish Air Force to replace the 70 Supermarine Spitfire PR.19's bought in 1948. This aircraft and the J-29B—latest fighter version of the J-29—have a greater range than earlier J-29's.

CPA Sells Comet; TCA Faces Competition

Canadian Pacific Airlines has sold its remaining Comet IA to BOAC but has not abandoned its plan for Comet service across the Pacific. It will decide in October whether to exercise its option on four Comet II's for delivery next summer.

In the same month CPA will inaugurate its new route from Vancouver to Mexico City and Lima, Peru. Some heavily loaded flights may make refueling stops at El Paso or Monterrey.

Although Canada's Air Transport Board is reported to have rejected CPA's application to compete with TCA domestically, the latter carrier now faces competition from the nation's youngest airline, Pacific Western Airlines, which results from the amalgamation of various small carriers based on Vancouver. The newcomer wants to start coach operations over part of TCA's transcontinental route, the Vancouver-Winnipeg segment, using Bristol 170's.



Fairey Rotodyne, now under construction, is to be powered by two Napier Eland turboprops. A Gyrodyne flying model for the Rotodyne will fly shortly. It has a 550-hp Alvis Leonides driving two Merlin blowers in the fuselage. Air from these is fed through the rotor head and blades to combustion chambers in the tips. For take-off and landing all power from the engine is used to supply the blades, but in forward flight these are shut off and the rotor autorotates. Propulsion is then by two propellers in the wingtips. The wings themselves share the lift with the rotor.

INTERNATIONAL AVIATION

MANUFACTURING

• **ITALY:** Piaggio has developed a new tricycle-undercarriage personal aircraft, the P.149 (see cut below), derived from the P.148 military trainer and likewise powered by a 240-hp Lycoming. Company's P.150 two-seat advanced trainer and P.136L twin-engine amphibian have completed their certification tests. Latter now has Lycoming instead of Franklin engines, increasing gross to 5842 pounds and top speed to 181 mph.

Fiat has delivered the first batch of license-built spare parts for Allison J35 jet engines. Total J35 parts contract awarded the company under the U.S. off-shore procurement program is worth $9,329,114.

• **BRITAIN:** Rolls-Royce Avon RA.14 deliveries have started —20 months after the first engine started running. RA.14 passed a type test at 9500 pounds (without re-heat) in April and thrust now is well into five figures.

Bristol is reported to be working on a turboprop version of the Olympus to power a development of the Britannia.

• **SWEDEN:** Svenska Flygmotor has developed a re-heat fuel system which enables full afterburner power to be obtained in 1.5 seconds. First application of the system (weight, 36.9 pounds) will probably be in an afterburner version of the Ghost which the company builds under license.

Svenska Aeroplan is working on a supersonic fighter developed from the Saab-210 Draken double-delta research aircraft.

• **NETHERLANDS:** Koolhoven, formerly a leading aircraft manufacturer, has been reactivated by the Van Driel en Van Ommeren company and plans to build France's SIPA 200 Minijet under license.

• **AUSTRALIA:** First Australian-built F-86, flew recently. It is powered by the Rolls-Royce Avon, which will soon go into production in Australia. This engine will be used in Australian-built Canberra bombers as well as in the Sabrejets.

• **GERMANY:** Messerschmitt's new aircraft company will use a plant located at the currently disused Essen-Mulheim airfield for the construction of single-engine lightplanes. Later, the firm may build twin-engine personal planes and subsequently large multi-engine trainers.

• **JAPAN:** Mitsubishi Heavy Industries Company has been licensed by Pratt and Whitney Aircraft Division of United Aircraft Corp. to build R-2800 engine parts.

MILITARY

• **BRITAIN:** First of a batch of five Prestwick Pioneer light transports has been delivered to the RAF by Scottish Aviation Ltd. for use in Malaya.

• **SWEDEN:** A batch of surplus early-model de Havilland Vampires is being sold by the Swedish Air Force.

• **CHILE:** Seventeen Republic F-47 Thunderbolts were recently delivered to the Chilean Air Force.

TRANSPORT

• **BRAZIL:** Aerovias Brasil's program to purchase 20 French-built Nord 2501 Noratlas transports has been blocked by the Banco do Brasil, Brazil's official bank, which has refused to approve the necessary credit operation.

• **BRITAIN:** Silver City Airways is again negotiating to operate a car ferry service between Cuba and the United States with terminals at Havana and Key West.

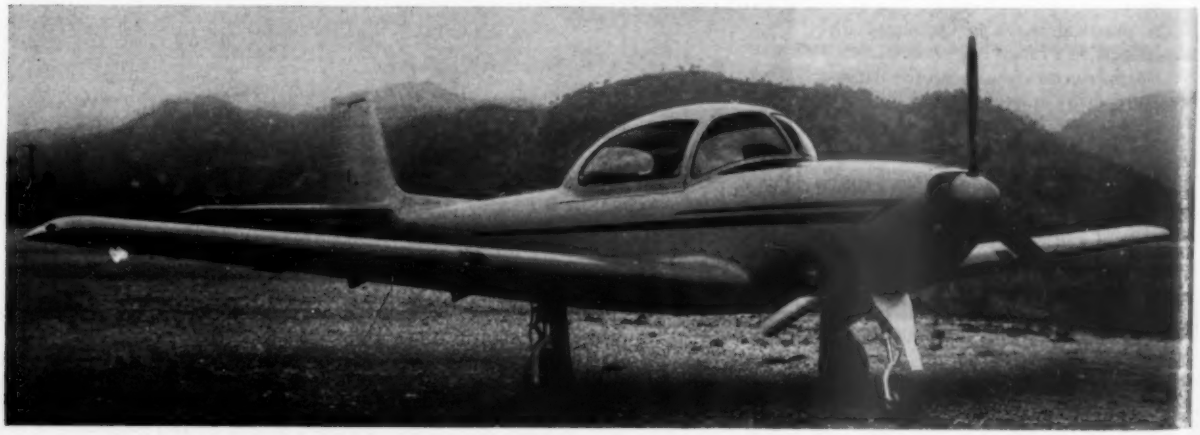
BOAC is offering for sale its remaining nine Handley Page Hermes. Canadair DC-4M's will take over Hermes services in October.

British European Airways will introduce Viscounts on several more routes this winter: Frankfurt, Madrid-Gibralta, Barcelona-Palma, Glasgow and Belfast.

• **AFRICA:** Central African Airways is reported to have been advised by BOAC not to go ahead with its project to buy three Super Constellations.

South African Airways has increased its domestic fares by 13.36%. One of the company's three weekly tourist flights to Europe, to be started October 1, will originate in Windhoek. Tourist flights will serve several European cities: Athens, Frankfurt, Rome, Paris and London.

• **ASIA:** India's airlines were formally nationalized on August 1. Domestic services are conducted under the name Indian Air Lines, whereas the name Air-India International is retained for overseas operations.



NEW PERSONAL AIRCRAFT, the P.149, from Italian firm of Piaggio, has 240 hp Lycoming (see text, above).

THE BULLETIN BOARD

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Books

REVIEW OF CURRENT RESEARCH

and Directory of Member Institutions, by the Engineering College Research Council of the ASEE, 103 Mechanical Engineering Building, State College, Pa. $2.50; 330 pp.

This latest edition of a biennial survey of current research projects in the engineering colleges covers some 7500 projects in 103 institutions. Approximately $65,000,000 is being spent annually on the efforts of over 13,000 faculty members, graduate students, and research engineers. In addition to a list of projects, the Review lists the officers responsible for research at each institution and outlines research policies.

NATURE'S CONTRIBUTIONS TO AERONAUTICS, *by Leslie L. Tirrell.*

Borden Publishing Co., 3077 Wabash Ave., Los Angeles 63, Calif. $3; 74 pp.

"With the known properties of air advocated by science it is impossible to present a mathematical equation that will explain why an airplane of 200,000 pound gross weight will fly any more than it is possible to prove a bumblebee will or can fly." Key word here is the author's "advocated." He has a good many reservations about what science is able to explain and what is still a mystery. He accordingly develops a theory of "Electronic Pressure" which he feels will resolve the paradoxes of flight. No readers will be won by the format of the thin volume, which presents page after page of bold black type unrelieved by either sub-headings or illustrations.

AVIATION TOXICOLOGY, *by the Committee on Aviation Toxicology, Aero Medical Assn. The Blakiston Co., Inc., 557 Madison Ave., New York 22, N. Y. $4; 120 pp.*

A survey of the toxic effects of various chemicals and the uses in which they may present a hazard to flight crews and passengers. The authors point out that the whole question of toxic gases becomes more serious at altitude, where the quantity of oxygen in the blood may already be below normal, and where a relatively small percentage of toxic gases may have significant effects. The possible result of even a small decline in the efficient performance of the flight crew also makes the subject of particular interest to the industry. More a warning of the problems that may turn up than a manual detailing their solutions. . . . W K

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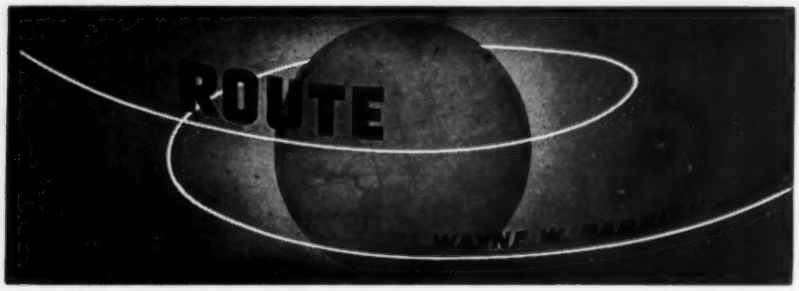

Tangier. I suppose everybody can rattle off the names of faraway places they've always wanted to go to. Maybe it's Zanzibar or Mozambique or Tahiti or Bali or Penang. One of those places that's been in the back of my mind for many years is Tangier.

Pirates, sin, money changing, smuggling, vice, intrigue, all of those I've connected with Tangier through magazine and newspaper articles. So purely in the interest of sociological research for you panting readers, I finally got to good old Tangier just recently and I lived safely through the experience and am now ready to tell you about it.

Let me assure you of two things at the outset. No. 1 is that Tangier today doesn't live up to its lurid reputation—it's an attractive, pleasant and in many ways a very conservative, quiet place. No. 2, it is one of the most unusual places on this globe. It is, in fact, unique.

Smaller than L. A. Maybe you don't know where Tangier is and you could hardly be blamed for not knowing. It's an international zone comprising 140 square miles, just one-fourth the size of the city of Los Angeles, in the extreme northwest corner of Africa. It isn't a country and it hasn't got a flag. It's a neutral zone administered by the consul-generals of seven countries —France, Britain, Spain, Holland, Portugal, Belgium and Italy. I think Russia was originally supposed to make an eighth but it never participated.

It is one of the freest little areas of the world today; perhaps it's the most free of any. Just how it got that way is rather involved, but as I get it back in the last century when European countries began doing business with the Arab tribes and nations they couldn't send diplomatic and trade representatives into the interior of Africa because of the hazards involved. Transport was terrible and it was worth your life to try to avoid piratical Arab groups. So the Europeans set up quarters in Tangier and the Arabs had to come there to do business.

Before that, however, Tangier had been captured by the Portuguese in 1471, just 21 years before **Columbus** found a lot of undeveloped real estate which later became the home of the hamburger and the hotdog. Then in 1662 Portugal transferred Tangier to England as part of the dowry of **Catherine of Braganza.** Nice little dowry, don't you think? It was pretty nice back in those days—for a few people—when you traded countries back and forth. I doubt if they took a vote among the population to find out if the people wanted their sovereignty moved around but that's the way it was done.

Moors took over. But somebody got gypped on that dowry because 22 years later in 1684 the Moors who had overrun much of Spain also took over Tangier and the country remained in Arab hands for a long time thereafter. In fact it wasn't until 1911-12 that England, France and Spain agreed to set up an international neutral zone of Tangier. It remained neutral through World War I and World War II. In 1928 its international administration was broadened to embrace eight countries.

Now that we've got that over with, let's take a look at the place. It has about 150,000 inhabitants, half of them Arabs, the remainder Europeans, with Spanish and French predominant.

There is no birth registration and no death registration. There is no public school system. There are no income taxes, in fact there is a minimum of taxation of any kind. It's pretty much of a free port. You don't have to ask anyone if you want to set up a bank or any sort of business. I guess you can say that fewer questions are asked about individuals than in any other spot on earth today.

Sins over-rated. You'd think all this would add up to a collection of dens of iniquity, but on the contrary Tangier is a very quiet place and the sinning is unquestionably less than in any sizeable city in the U.S. It's ultra conservative in some things, in fact. You can't have people up to your hotel room for a social drink if there's a gal in the group, for example. The most innocent kind of sociability is prohibited by the leading hotels.

There are many cities in the world which combine the old with the new, but I think Tangier is one of the very best examples. The old Arab quarter, the Medinah, is in the center of town surrounded by a modern city. The Medinah is completely safe for visitors at all times and is, like all old Arab quarters, completely fascinating with its myriad rambling narrow passageways.

On the main street you find an extraordinary collection of costumes. A French sweater girl will be walking alongside a veiled Arab woman. Some of the veiled women (and by far the majority of Arab women in Tangier are veiled) actually wear sun glasses. Burros and goats can be seen in the city along with smart new cars. A few blocks from the Arab marketplace with women squatting on the street selling anything from flowers to fruit are some of the smartest, sleekest shops you'll find anywhere.

The El Minzah. My Air France friends recommended that I stay at the El Minzah Hotel and it was a wise choice. There are more modern hotels, such as the Velasquez and the Rembrandt, but the El Minzah is a fine old hotel with a lot of charm and color, and is situated very near the old Arab quarters. It has an absolutely Class A dining room and the service is excellent. But best of all it has a big patio, gardens, and quite a few large public rooms blending the architecture and decorations of Spain, Portugal and Islam.

Several years ago Tangier was having a boom. It was crowded and expensive. There were lots of bars and nightclubs. Today the nightclubs are closed and the bars almost empty. Prices have gone down. It's become a tourist paradise again and I'll tell you more next issue.

NO MATTER WHERE YOU LOOK in Tangier the view is predominantly white. Ultra-modern buildings vie with old Arab quarters for attention.

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From nose to tail, the famous Fairchild "Flying Boxcar" is manned by unseen hands—4 different types of Lear Products, performing a dozen different tasks. Included are such precision-engineered electro-mechanical products as Linear and Rotary Actuators, Flexible Shafting and Screw Jacks.

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To protect its new fleet of million-dollar Douglas DC-6B's, Western has specified that all of them will carry fire-resistant Monsanto Skydrol* in the cabin superchargers. These new planes are for service on the Pacific Coast, and between California and Minnesota.

Western is the 15th major airline to adopt this safe, non-corrosive hydraulic fluid which is unique in its field.

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THIS BOOK, containing complete Skydrol specifications and test data, will be sent to airline officials or aircraft owners on request. Write MONSANTO CHEMICAL COMPANY, Organic Chemicals Division, 800 North Twelfth Blvd., St. Louis 1, Missouri.

News at Deadline

AFA Urges Civilian Strategy Evaluation

Formation of a commission of prominent civilians to evaluate national strategy and to advise the Joint Chiefs of Staff on the subject has been recommended by the Air Force Association. The permanent, politically independent group would provide the Joint Chiefs with "professional help" in evaluating the effectiveness of various weapons systems, according to a policy statement adopted by AFA members during the business session that brought to a close the organization's annual convention in Washington (see page 16).

The Weapons Systems Evaluation Group, according to the AFA, "has not been uniformly objective or effective in all of its studies," making the creation of a new group necessary in order that the Joint Chiefs may be supplied with "advice characterized by high dedication to national rather than to service interests."

The policy statement emphasized the increased importance of effective military forces now that Russia presumably has the hydrogen bomb. "We must shift emphasis . . . from reliance on our mobilization base to dependence upon adequate *forces-in-being*," the AFA warned. "Mutations in the 'science of destruction' will place an everincreasing premium upon the qualitative aspects of our air strength."

Citing lowered morale among officers and men in all the armed services, the AFA called upon the President to form a commission to study the problem, with emphasis on "weeding out the incompetents" and establishing "personnel standards of the highest order."

The staff of the Secretary of Defense might be a good place to start a personnel survey, the organization suggested, to make sure that the staff members have "a well rounded familiarity with all aspects of all three services" and to ensure that Defense Department decisions do not continue to be made, as they "frequently" are at present, "in profound ignorance of the problems of other services."

Such military decisions are also hampered by an undue concern with the budget, the AFA concluded. "Our military leaders should not be called upon to serve as economists," the statement noted. "The military conclusion should be based upon a forthright and honest appraisal of requirements," with the economic considerations left to the civilian leaders. The AFA sees no sign that this was the approach used during the recent budget planning.

Neutral airports with United Nations representatives throughout the world to implement "Freedom of the Air Spaces" and allow free passage from one country to another would lead to a great growth in air commerce, the AFA believes, and the United States should seek the establishment of such airfields. The nation should also announce that the full force of U. S. air and atomic power would be applied in case any Korean-type wars break out in the future.

Slick Asks Freight Rate Increases

An increase in air freight rates of approximately 25% has been asked of the CAB by Slick Airways, certificated all-cargo line. Slick requested that the Board direct carriers to show cause why rate minimums (established over four years ago) should not be increased, preferably starting on October 1, the beginning of the high volume freight season.

Slick recommended increases from 16¢ to 20¢ per ton-mile for the first 1000 ton-miles and from 13¢ to 16.25¢ for each ton-mile thereafter.

The cargo carrier claimed that American Airlines had blocked rate increases for more than a year.

Prepare for Long Run Air Power: Kyes

"We must gear our preparation to the long run," Deputy Secretary of Defense Roger M. Kyes told the Air Force Association during its annual convention, while being "realistic and objective" in planning national security.

Although describing air power as the "keystone" of military strength, Kyes warned that "national security must be carefully considered with respect to its very element, as well as to its total complex structure, in order that we may be certain of building effective and coordinated strength."

Kyes observed that review of the nation's military strength now being undertaken by the Joint Chiefs of Staff would probably result in a final decision somewhere between the various extreme positions advocated by partisans of one military theory or another.

Twin-Source Production Base Seen by Lewis

The Air Force had no choice but to cut the heavy press program, move C-119 production from Willow Run, and cancel the T-36 trainer program, Assistant Secretary of the Air Force Roger Lewis told the Air Force Association Airpower Symposium, because of its responsibility to the taxpayers. The current trend toward a narrower production base would not take facilities down to the level of one-of-a-kind, he assured the AFA audience; the Air Force will "try to have at least two of everything in production."

In a speech prepared for presentation Lewis noted that research and development effort must be continuous, inventive, aggressive, and timely, for "in war . . . being second best by however small a margin spells defeat . . . From 1947 to 1949, for lack of funds, not one single new aircraft or guided missile research project was undertaken by the Air Force."

Commercial Version of C-82 Packet Prepared

A Fairchild C-82 Packet plane has undergone slight modification for preliminary tests to determine its suitability for commercial use and possible CAA certification. Fairchild Engine & Airplane Co. officials at Hagerstown, Md., where the work has been conducted, said the changes are being made under a small Air Force contract.

The plane was to be flight tested during the past week, the AF contract calling for only five hours of flight testing. The transport was modified for civil flight tests for possible use by commercial operators in carrying cargo under contract for the military, according to Fairchild officials. The Flying Tiger Line has been reported as "interested" in such an operation with the C-82's.

Most of the modification will be done internally, such as removal of seats, the monorail system for cargo dropping, etc., while on the outside cer-

tain antennae and the astrodome will be removed. Fairchild installed one new engine for the use in single-engine flight in the preliminary test.

The C-82, first twin-boom transport built by Fairchild, has long since been replaced on the production line by C-119's, but is still in limited use by the AF as a troop carrier and cargo transport. It cruises at about 170 mph, a top speed approaching 250 and a range of about 2200 miles. Fairchild officials said 220 C-82's were sold to the AF.

Unions Plan Aircraft Negotiations Strategy

Leaders of two unions, representing most of the nations aircraft workers, have met in Washington to plan strategy, backing their recently signed four-year agreement, for forthcoming joint negotiations with aircraft manufacturers. Prime target was United Aircraft where the unions are directing their attention to "substandard wages and working conditions." The two unions represent all workers at United's four major aircraft divisions. Represented at the meeting were the International Association of Machinists (AFL) and the United Auto Workers (CIO).

Beech Engineering Personnel Shifted

The engineering department of Beech Aircraft Corp. has undergone a reorganization following the resignation of Theo A. (Ted) Wells, vice president and chief engineer.

Three engineering divisions have been set up with veteran employes named to head them as follows: military projects, A. S. Odevseff, with the company for 17 years; commercial projects, Herb Rawdon, a 13-year employe; administrative and statistical division, Dean Burleigh, 19 years of service. The three will report to John P. Gaty, vice president and general manager, until a new chief engineer is appointed.

In addition, C. C. Pearson, vice president for manufacturing, has been elected to Beech's board of directors with two new vice presidents—James N. Lew, contract administration, and Lynn D. Richardson, military sales and eastern representative—also elected. Thomas B. Neelands, Jr., of N. Y., resigned as a member of the board to devote full time to his business interests in the east.

Wells, who had been with Beech for about 20 years, plans a trip to Europe before announcing his future plans.

ATA Reveals 'Copter Development Data

The fastest growing force in air transport equipment today, industry experts feel, is not the jet transport but rather the helicopter. In the field of helicopter development, however, the shape of things to come is largely obscured by military security. In the limited areas where security considerations do not prevail, the proprietary interests of individual manufacturers are even more restrictive.

Recently the civil industry got a first-hand account of some interesting areas of helicopter development. Releasing its "Preliminary Report on the Use of Helicopters in Scheduled Airline Operations," the Air Transport Association also released some hitherto undisclosed developmental data:

• **Sikorsky will make its bid** for the next helicopter transport market, beyond the S-55, with a twin-engine, single-rotor helicopter of 50-passenger capacity. It will be powered by two geared turbine engines, have a payload capacity of 10,000 pounds over a range of 200 miles, and gross about 34,000 pounds. Cruising speed is slated for 160 miles per hour, and a minimum one-engine-inoperative flight speed is 25 mph. Normal rate of climb is estimated at 2000 feet per minute.

• **The turbine engines** of the Sikorsky will be mounted in nacelles at the outboard end of stub wings located above the fuselage. The landing gear is retractable. A single tail rotor and horizontal stabilizer are used, and the rotor system and blades are fully provided with ice protection for all-weather operation.

• **Officially no price** has been set on the new model, which should be available for airline operation in 1959-60, but ATA's helicopter committee members agreed that it would cost between $550,000 and $600,000, based on the cost of today's models.

• **Piasecki's entry** in this field will also be a twin-engine model, but one using the familiar Piasecki twin-rotor system and powered by two Allison T38 engines. Grossing 45,000 pounds and carrying a 10,500-pound payload over 200 nautical miles, plus reserve, the Piasecki commercial version of the military H-16 would carry up to 50 passengers in a coach configuration at cruising speeds up to 175 miles per hour.

• **Prototype model** of the H-16, powered by two P & W R-2180 engines "appears underpowered for its size," the ATA reported, but the second prototype with the turbine engines will be flying within 18 months. Availability for airline operation should be sometime in 1959.

• **Piasecki helicopters** have logged about 38,000 hours total flight time, with the maximum time on one helicopter at about 1400 hours.

USAF to Halt Shemya Operation in July, 1954

The USAF has set July 1, 1954, as the date it will cease AF operation of Shemya Airport in the Aleutians. The CAA will have to take over the responsibility for the fields maintenance if CAB rules that the north Pacific route to the Orient should be continued. Canadian Pacific and Northwest Airlines use the field.

CAA officials indicate this would be a "tremendous" financial handicap under CAA's present operating budget. Only possible alternatives would be for the airlines to change to a southern route or use other AF fields in the Aleutians, which would involve greater fuel requirements or different type aircraft.

Local Carrier Could Ease Trunk Load

The second annual Aviation Education Institute held its week-long sessions in Washington late this month with 45 educators of administrative level attending. Highlights of the speeches and discussions:

• **Leslie O. Barnes,** president of Allegheny Airlines, told the group that local service carriers should be given first route preference when trunk carriers asked for relief along long-haul segment stopovers. When additional service is needed to these points, the local service group should be given priority over carriers that might need subsidies to operate the routes. It would call for, he observed, taking certain restrictions off the local service carriers.

• **William B. Becker,** ATA's director of operations, stated that the following numbers of certificated personnel were employed by the airlines as of May, 1953: 9646 pilots and copilots; 1575 flight engineers; 966 dispatchers and assistants; 220 flight navigators; 110 flight radio operators; 975 ground radio operators; and 31,670 mechanics. Total certificated personnel: 45,162.

• **Burt English,** assistant director of public relations for AIA, stated that the current approximate 1000-a-month military aircraft production rate will continue for about a year under the new budget and will phase down to 500 per month thereafter, with about 2500 planes being produced over the next three years. He pointed out that long range procurement, if ever achieved, could reduce aircraft costs by about 25%.

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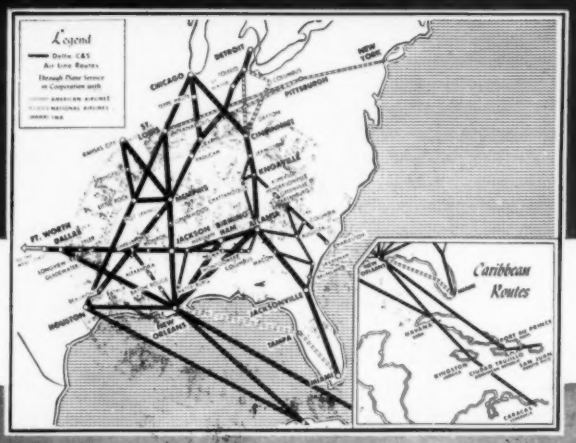

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